Smaller, Better, Faster, Stronger

Remaking government for the digital age

Chris Yiu
with Sarah Fink
and a foreword by Rohan Silva

@PXDigitalGov

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Policy Exchange

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Published by
Policy Exchange, Clutha House, 10 Storey's Gate, London SW1P 3AY
www.policyexchange.org.uk

ISBN: 978-1-907689-56-7
Printed by Heron, Dawson and Sawyer
Designed by Soapbox, www.soapbox.co.uk

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About the Digital Government Unit

Our work focuses on the potential for technology, data and the internet to transform public policy and the economy. Recent research programmes have covered topics including open data, big data, broadband policy, digital inclusion, and start-ups and digital entrepreneurship.

For more information on our work please visit the Policy Exchange website or contact us via one of the channels below.

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Acknowledgements

We would like to thank all of the people and organisations who so kindly gave up their time to answer our questions and share their perspectives with us in the course of this research.

We are particularly grateful to EE, Intuit, Microsoft and SAS for the generous support and encouragement that made this project possible.

We would also like to extend special thanks to Cameron Scott and Colleen Nwaodor at Policy Exchange; to Rebecca Kemp, Tom Loosemore, David Thorpe and all the team at the Government Digital Service; and to Rudy Sooprayen at YouGov.

The conclusions of this report, along with any errors and omissions, remain the authors' alone.

Foreword

It was Margaret Thatcher who put it best, in her final election rally in 1979: "The heresies of one age give way, as they always do, to the orthodoxies of the next." Amen to that. From the moment I started developing our digital policy agenda seven years ago, I was told that our approach was "unworkable", "risky" and "would push up IT budgets". These predictions were, it turns out, the myopic bleatings of vested interests and ineffectual public sector IT chiefs, but they nevertheless reflected the political establishment's amateurish and corporatist approach to government IT.

Fortunately, as this wonderful report shows, our "heretical" agenda of open data, open standards and open source software has now become best practice for governments around the world - the new "orthodoxy", so to speak.

My digital policymaking journey began back in 2006, when I wrote a speech for George Osborne on "Politics and Media in the Internet Age". Looking back on it now, the speech seems quaintly dated in many ways (it's chock-full of MySpace references, for a start), but the core message that the "internet revolution...is bringing about a decisive shift in the balance of power between citizen and state" continues to be at the heart of the Government's vision for technology. In fact, seven years on, this section of the speech is arguably as apposite as ever:

> *"But to really harness the new technology, you need to rethink the way public services work. As we move from a one-to-many to a many-to-many world, it won't do to just replicate the same old processes, with new technology.*
>
> *"After all, it's good that you can now apply for your passport online, but why can't you check hospital waiting lists or doctor appointments in real time? It's a step forward to be able to submit your tax forms online, but why is it not possible to find out where that money is being spent?"*

Of course, before we could get on with harnessing technology to transform public services and the rest, we had to get to grips with the profoundly broken government IT systems we were to inherit from the Labour Government. I'm not making a lame partisan point here, by the way - it's simply a statement of fact. To prove the point, let me give you three statistics that illustrate the catastrophic waste, incompetence and mismanagement that were the hallmarks of the last Government's approach to IT:

1. By 2010, Labour was spending £25 billion a year on public sector IT - that's more per person than any other country in the world. (To give you a sense of the mind-boggling scale of profligacy and waste, even largely non-transactional departments like BIS were spending more on IT each year than Google...).

2. 70% of IT spending between 1997 and 2010 went to just seven (!) companies. This was disastrous on two counts: first, it meant that there was next to no competitive tension for public sector IT contracts, so costs were far higher than they would have been; second, it meant that British SMEs were completely locked out of the procurement system, with grotesque negative consequences for costs, innovation and the UK technology economy as a whole.
3. In May 2010, we inherited 750 (!) separate government websites, each designed, hosted and created separately, at a staggering cost to taxpayers. Take the Business Link website, for example, which was easily one of the most abysmally designed, confusing and useless websites I've ever seen. The cost? An utterly preposterous £105 million for three years. That is at least ten times what that contract ought to have cost - and it's just one of literally hundreds of chronically mismanaged government IT contracts dished out to big business between 1997 and 2010.

So that is what we were up against. In 2007, we set out for the first time our policy framework for getting to grips with this mess, in a speech I wrote entitled (somewhat pretentiously, I'll admit) "Recasting the political settlement for the digital age". Significantly, this speech by George Osborne committed us to opening up government data, creating a level playing field for open source software and introducing open standards for government IT. Taken together, these policies promised to make government more transparent, enable new companies to be built using public sector data, and end the era of massive public sector IT projects and the cosy relationship between the Labour Government and the oligopoly of multinational IT companies that had ripped off taxpayers for well over a decade.

As you might expect, taking on these vested interests led to an immediate backlash. One global IT company even took to calling Tory MPs and threatening to close down R&D centres in their constituencies, unless we backed down on our commitment to open standards and open source software. To his eternal credit, George Osborne refused to budge an inch.

Meanwhile we were told by public sector IT "experts" that our spending transparency proposals would cost "hundreds of millions of pounds to implement". To show that this was bunkum, I called Windsor and Maidenhead Council and they immediately agreed to run a spending transparency pilot. Within a few days we were able to declare that their spending data was freely available online, with a total implementation cost of basically zero.

I flag up these examples to show that almost every inch of the journey towards a modern and transformative agenda for public sector IT was a huge struggle against inertia and bureaucratic opposition, which makes achievements like GOV.UK, the wonderful (and award winning) single portal for government, so spectacular. The fact that the UK is now the world leader in open data, from a standing start in 2010, is also incredible to behold. And of course, the billions of pounds that have already been saved from public sector IT budgets - literally taking Labour contracts that cost billions of pounds, and replacing them with contracts costing a few thousand pounds - are also a proud testament to the fantastic progress that has been made.

None of this would have been possible if we didn't have political leaders with the appetite to confront the wasteful status quo, when the path of least resistance would have been to carry on as before. George Osborne, who is a true technophile and diehard supporter of innovation and reform, was endlessly curious and supportive from day one. David Cameron and Steve Hilton were immeasurably generous with their time and backing, particularly on open data and opening up government procurement to SMEs. Francis Maude has been a devastatingly powerful leader for this cause in Government, facing down innumerable obstacles thrown up by the bureaucracy and unstinting in his work rate and commitment. Jeremy Hunt has also been a passionate and expert advocate of these policies, as have the tireless Oliver Letwin and the inestimable Ed Davey and Danny Alexander.

In Opposition, Tom Steinberg (on open data), Mark Thompson (on open source), and Jerry Fishenden and Liam Maxwell (on IT procurement more broadly) were unfailingly generous in donating me their time, ideas and patience as I worked to develop our policy agenda between 2007 and 2010. None of our achievements in this area would have been possible without them, while civil servants such as Jeremy Heywood, Mike Bracken, Tom Loosemore, Andrew Stott, Stephen Kelly and Sally Collier deserve an immense amount of credit for their steadfast commitment to impartial and creative policy implementation.

Nigel Lawson once told me that you've only really achieved something in Government if you bring about change that the next administration couldn't overturn in a single term. I have no doubt that our achievements on open data, reforming government IT, opening up contracts to SMEs, creating a Government Digital Service and so on fall into this special category. The genie is well and truly out of the bottle, and there's no going back. This Government is widely recognised for driving radical reform in education, welfare reform and deficit reduction. In my view, the IT agenda documented in this report is every bit as important and impressive as those other areas, and I'm sure will come to be seen as such in the days ahead.

However - the march of technology is relentless, and having fought so hard to overcome the old public sector IT "orthodoxies", we must not ourselves become deaf to the new "heresies" that ought, in time, to supplant our current thinking. That is why Policy Exchange's work in this area is so vitally important - it will help ensure that this Government, and future Governments, are exposed to new provocations and ideas, and continually pushed to make public sector IT even more efficient, even more effective, and even more transformative for citizens. It really is no exaggeration to say that the future of our public services depends on it.

Rohan Silva
Senior Policy Advisor to the Prime Minister, 2010–13

Executive Summary

The internet is changing our world in more ways than we could ever have imagined. And as it reaches into every corner of our lives, it is transforming our relationships with one another, the jobs we do and the ways we spend our time.

For the organisations living through these changes, the operating environment has changed profoundly. Around the world, industry after industry has been turned on its head by the internet and the things that digital technology makes possible. But when we look back over the last two decades, nowhere has the internet revolution been felt less than in the business of government.

To its credit, the current administration has made a real effort to up the pace of reform. Much progress has already been made, spearheaded by the new Government Digital Service. The Government Digital Strategy lays out what more there is to do over the next two years. That the government goes on to achieve the goals it has set itself is tremendously important.

It is also only the beginning.

The future awaits

Over the course of this decade, two fundamental trends will cause us to radically rethink the way government works, with major implications for both policy and policymakers alike.

The first is the acceleration toward ubiquitous availability of general purpose digital technologies. This will make it possible to completely rethink how government organises itself, how it learns and adapts, and how it fosters innovation. At the same time, a population that is always connected and at ease with a digital world will make it possible to entertain radical changes in the way public services are delivered without compromising on quality, engagement or accessibility.

The second is the shift toward openness as the default, not just in technology but across our economy and society. A genuinely open government that responds to the growing demand from citizens for accountability and participation will deliver better policies and foster stronger communities. And in an open, networked world, we will discover that many of the things that were once the sole preserve of governments are, in fact, sometimes better done by someone else entirely.

The organisations that are already thriving in this new digital age share some important characteristics. They leverage technology to enable a *smaller* number of people to get the job done. They set their sights on doing things *better*, not just by a little but by a very long way. They work *faster*, iterating rapidly and using data to guide their decisions. And through openness they build *stronger* communities to support and promote their activities.

Recommendations

This report looks ahead to the second half of this decade, and considers the big changes that will be needed for government to make the most of the opportunities presented by technology, data and the internet. Our recommendations are organised under three related themes.

Root and branch digitisation of government activity

By 2020 government must move from *digital-by-default* to *digital, full stop*. Moving paper up and down the country is slow and expensive. Government should **eliminate paper** for interactions within and between departments, and **switch exclusively to digital channels** for public services that do not need a face-to-face interaction with the public. Where face-to-face contact is important it should be strengthened.

There is a huge economic opportunity for the UK if we embrace the concept of government as a platform. Government should adopt **electronic purchasing** to make procurement more efficient and drive take up by businesses. Government should also begin routinely issuing **electronic proofs** instead of paper certificates, and expose **application programming interfaces (APIs)** to enable developers to write apps that can communicate with government systems.

Developing a total data approach for government

By 2020 government needs to have moved from *open data* as a fringe activity to *total data* as its guiding philosophy. Government should extend **lean start-up methods** as a preferred way of working, incorporate **digital and data skills** into the Civil Service competency framework, and establish controls to **ensure policies can be tested** against data. Taken together, these changes should result in better outcomes, delivered more quickly and with less risk.

A total data approach encompasses a wide variety of data users. Government should **open up all non-personal public sector data** with persistent uniform resource identifiers (URIs), as a foundation for accountability and economic growth. Government should also start **buying in big data analytics** on a payment-by-results basis, to flush out savings that the public sector has thus far been unwilling or unable to realise.

Restoring a culture of excellence and innovation in government

As is so often the case, the toughest challenges ahead are around *people, leadership and organisational change*. By 2020 government needs to have developed more outstanding leaders who can drive digital into the DNA of public sector organisations. Government should **increase interchange** so that most senior staff have recent external experience, and **introduce more fixed-term appointments** for senior staff, so that people are crystal clear on their objectives and have a strong incentive to master digital tools and approaches.

For people working in government, openness, excellence and innovation must be the norm at all levels of responsibility. Government should publish an **open directory of officials** to reduce the friction around open policymaking. Government should also **enrol the top 10% of staff at all grades in an explicit innovation drive**, emulating an approach that has proved successful in many large businesses, and **allow more teams to spin out their activities** in partnership with UK technology start-ups and other partners.

Next steps

The changes outlined here would mark a wholesale reorientation of the way government is run. They are highly interdependent and so we have not attempted to quantify each in isolation. Nevertheless, our analysis suggests that the potential benefits are significant. If we can accelerate the rate of public sector productivity growth to match that in comparable parts of the private sector, then by 2020 a digitally transformed government could be up to 8% more effective than if it continued doing business as usual. This could free up **£24 billion a year** to be spent on a combination of public service expansion and/or deficit reduction.

There would also be significant benefits beyond the potential to get the same amount done with a smaller number of staff. We would expect a more data-driven approach to drive further reductions in money lost to fraud (including tax fraud), errors and unpaid debt; open and testable policy to result in government making smarter decisions about what works; and open data, APIs, electronic purchasing and electronic proofs to catalyse wider digitisation, promote economic growth, and save time, money and hassle for people on a daily basis.

This agenda matters for all of us. The notion that we can reach for genuine, transformational change in government, and build a modern, digital, open government to match the needs and expectations of a modern, digital, open society, is one that transcends traditional political ideologies. Starting today, and working together, we can and should remake government for the digital age.

1 Introduction

Our story about the future of government begins in 1989 at CERN, a particle physics laboratory in the northwest suburbs of Geneva near the Franco-Swiss border. It was here that a young engineer and Oxford graduate named Tim Berners-Lee first linked his work on hypertext documents to the Transmission Control Protocol and Domain Name System that underpins the internet, and in so doing invented the World Wide Web.[1]

Twenty-three years later, Sir Tim sat down in front of a computer in the centre of the Olympic stadium in Stratford for the opening ceremony of the London 2012 Olympic Games. Watched by 80,000 people in the stadium, hundreds of millions following online and an estimated TV audience of over one billion, he sent what has become one of the most famous tweets of all time: "This is for everyone".[2]

The internet, and the World Wide Web in particular, is perhaps the greatest accelerator of change that humanity has ever unleashed. A neutral internet built on open standards has provided a platform for innovation far beyond what previous generations might have imagined possible. In just a few short years, the web has changed many aspects of our economy and society almost beyond recognition.

Life, the universe...

The change we are living through today was described by Marc Andreessen in 2011 as one of "software eating the world".[3] In one industry after another, the exponentially increasing capability of online networks has precipitated a radical shift in the balance of power. To take a few familiar examples:

- Traditional 35mm film cameras have all but disappeared from our day-to-day lives. Many of the companies that once thrived on sales of analogue consumables and physical processing are long gone, usurped first by high-tech manufacturers of digital cameras and memory cards, and now by the software running on ubiquitous, powerful smartphones. Instagram, when it was acquired by Facebook in 2012 for a cool $1 billion, employed just 13 people and existed entirely in software and on the web.[4]
- Our high streets are no longer many people's first choice for going shopping. Unencumbered by the overheads of running a physical network, and with the added ability to tap a long tail of items that no traditional store could possibly hold in inventory, online retailers are aggressively undercutting their bricks-and-mortar competition.[5] Moreover, many of the underlying products have

1 CERN, "The birth of the web", 2013

2 Pocket-Lint, "Olympic opening ceremony sees Sir Tim Berners-Lee tweet 'This is for everyone'", July 2012

3 Wall Street Journal Online, "Why Software Is Eating The World", August 2011

4 Bloomberg, "Facebook Agrees to Buy Instagram Photo App for $1 Billion", April 2012

5 Insead, "Clicks versus Bricks: The Battle for the High Street", April 2013

themselves been digitised. This is particularly true for entertainment products – many of the books, music, movies and games that were first available in stores and then shipped in the mail can now be downloaded instantly. Amazon already sells more ebooks than hardbacks and paperbacks combined.[6]

- Internet technologies have transformed the economic viability of large scale peer-to-peer networks, disintermediating traditional businesses and creating vast new markets that wouldn't otherwise exist. Auction and recycling websites move hundreds of millions of unwanted items to people who can make use of them. Collaborative consumption platforms have massively reduced the cost of access to capital goods like cars and spare rooms. Businesses whose aspirations for growth once stretched as far as the neighbouring town now leverage search and customer feedback to gain a foothold in a global market.

In the face of such unprecedented change, many previously dominant firms have had little choice but to adapt – with varying degrees of success. For the most part, the entrepreneurs born from the internet generation have been remarkably successful at disrupting the status quo. It would be a gross simplification to ascribe their achievements simply to good fortune or fair timing. Every innovation has its own unique story of hard work put in, sacrifices made and hurdles overcome. Nevertheless, many of the successful start-ups and survivors alike share some common characteristics. Typically they:

- Enable a relatively *smaller* number of people to make a big impact, by taking advantage of modern technology and network effects to amplify their activities.
- Deliver a product or service an order of magnitude *better* than what went before, setting their ambitions audaciously high and not being satisfied unless they surpass them.
- Work *faster*, deploying agile techniques to take modular projects rapidly from inception to live prototyping and iteration, with decisions informed by real-time feedback and data.
- Rely on *stronger* networks and communities – internal and external, formal and informal – as the foundation for a collaborative approach to problem solving and delivery.

In principle, any organisation can follow this sort of approach as the basis for innovation and growth. In practice, it typically has the greatest impact when embraced in one of two contexts. First, where a challenger realises an opportunity to out-innovate tired incumbents in a stale market (often redefining the market itself in the process). Second, where an incumbent realises – in time – that it is facing an existential threat to its business and needs root and branch change to survive.

...and everything

When we look back over the last two decades, nowhere has the internet revolution been felt less than in the business of government.

Change has, of course, happened. In a world rocked so fundamentally by digitisation, some degree of advance was inevitable. And the current surge of

6 BBC News, "Amazon selling more Kindle ebooks than print books", August 2012

activity to rationalise UK government web publishing and shift transactions online may well mark an important turning point. But the operating environment that the government is facing has changed dramatically. And at its core, government remains a largely analogue business, living on borrowed time in a digital world.

Unlike the other dinosaurs of the pre-internet age, government enjoys a singular status that lets it sidestep the choice between change and extinction. Whereas giants in other industries have been beaten at their own game by fitter competitors, or had the rules of the game itself changed whilst they were looking the other way, government has an almost unassailable monopoly by virtue of its democratic legitimacy. Even at electoral turning points, one administration succeeds another and inherits this privileged position. In these circumstances, maintaining momentum on radical reform is challenging at best, and beyond reach for many.

This report is about a world where the government for the next parliament – whatever its political leaning – bucks the trend. One where technology, data and the internet are harnessed not just at the margins of government business, but to truly transform the way government operates. One where policymaking is better by design, where public servants are liberated to focus their talents and energy where they can make the most difference, and where citizens enjoy a rich, satisfying relationship with the state on terms of their choosing.

A world where we remake government for the digital age.

2
Digital by Default

Seeking to make better use of information and communications technologies in the public sector is not a new agenda. This report is resolutely forward looking, and is primarily concerned about the big-picture priorities for the 2015 parliament. Nevertheless a short primer on the history in this area is instructive.

What follows is necessarily a rapid and partial tour of the UK government's digital heritage. Interested readers are encouraged to refer to the original sources for a fuller account of policies announced, strategies implemented, courses altered and changes delivered.

1997, or in internet years, ancient history

Shortly after winning a landslide general election victory in 1997, Tony Blair announced ambitious goals for getting the UK government online. He set a target for all government's dealings with the public to be capable of being done electronically by 2008, with interim targets of 25% by 2003 and 50% by 2005.[7]

Around the same time, Liam Byrne wrote a pamphlet for the Fabian Society making the case for radical reform of government to enable the bureaucracy to deliver New Labour's vision for the country. His "simple government" concept suggested that by working more closely, privatising sections of the Civil Service, and making greater use of IT, government could save £3.5 billion from the cost of running the state.[8] In his words at the time:

> *"Her Majesty's Government is a fractured bureaucracy of obsolete structures, antiquated procedures and out-dated technology, incapable of delivering Blair's agenda to information-age Britain."*[9]

By March 2000, progress against New Labour's e-government objectives had been slower than hoped. The Prime Minister's response was to declare the targets insufficiently stretching. The deadline for 100% electronic availability of government services was brought forward to 2005.[10]

DirectGov (and its discontents)

As more and more government departments and other public sector bodies established a presence on the web, knowing where to look for information became increasingly difficult. In 2001, the Cabinet Office launched a portal known as UKonline, which allowed users to search for topics and retrieve lists of which government departments to go to for more information.[11]

7 HM Government, "Modernising Government", March 1999

8 Fabian Society, "Information Age Government: Delivering the Blair Revolution", October 1997

9 Ibid.

10 Guardian, "Blair sets earlier target for online Whitehall", March 2000

11 DesignWeek, "Government goes UKonline", February 2001

UKonline was replaced in 2004 by Directgov, which hosted core content on a central platform as well as providing links to other departments.[12] To get the site built, the Cabinet Office e-Delivery team employed a range of tools and techniques that were unfamiliar to many in government. These included studying user behaviour, releasing beta versions to test new features, and organising content around "franchises" that went with the grain of people's lifestyles (and often crossed departmental boundaries, e.g. motoring or parenthood).[13] Nevertheless, in most instances citizens were still handed off to separate websites to complete individual transactions (e.g. filing a tax return or applying for a passport).

A companion Business Link site was established to consolidate the government's online resources, support and information for businesses.[14] By this point, public sector bodies had between them established over 2,500 separate websites. The plan was to progressively rationalise all of these down onto either Directgov or Business Link.[15] Alongside these two sites the Government Gateway was developed to enable secure online payments and exchange of personal information.[16]

In 2008, responsibility for Directgov was shifted to the Department for Work and Pensions, as part of its new remit as a department for citizens. Business Link, meanwhile, was administered by HM Revenue & Customs, one of the main business-facing government departments. In a 2011 report on digital government, the National Audit Office estimated the lifetime cost of Directgov at £128 million, Business Link at £204 million and the Government Gateway at £147 million. As the benefits of these initiatives were not routinely measured, the report was not able to ascertain whether this was money well spent.[17]

Revolution, not evolution

Following the 2010 general election, David Cameron appointed the internet entrepreneur Martha Lane Fox as UK Digital Champion, and Francis Maude asked her to oversee a strategic review of Directgov.[18] The review suggested that a radical reform of Directgov could deliver a better service for citizens and improve efficiency. To achieve these ends it recommended putting a central team in the Cabinet Office in charge of the overall user experience across all the government's digital channels.[19]

This central team became the Government Digital Service (GDS), with Mike Bracken joining the Cabinet Office to lead this group as the new Executive Director for Digital.[20] On 17 October 2012 GOV.UK replaced Directgov and Business Link as the first port of call for government services and information.[21] The following April, GOV.UK won the prestigious Design Museum Design of the Year Award 2013.[22]

Around the same time that Martha Lane Fox was reviewing Directgov, activists from a group called the Network for the Post-Bureaucratic Age published a pamphlet setting out a plan for realising massive savings by reforming the way government buys IT.[23] The lead author, Liam Maxwell, went on to join the Cabinet Office and was appointed Government Chief Technology Officer in December 2012.[24]

These hires were just two among many that have seen the Cabinet Office assert a renewed degree of control over efficiency and public sector reform. Important milestones over the past three years have included:

12 National Archives, "Records of Directgov"

13 Government Digital Service, "DirectGov – our story", July 2011

14 Government Digital Service, "The next (business) link in the chain", November 2012

15 HM Government, "Transformational Government; Enabled by Technology", November 2005

16 HM Government, "Transformational Government; Enabled by Technology, Annual Report 2006", January 2007

17 National Audit Office, "Digital Britain One: Shared infrastructure and services for government online", December 2011

18 HM Government, "Martha Lane Fox appointed as UK Digital Champion", June 2010

19 Martha Lane Fox, "Directgov 2010 and beyond: revolution not evolution", October 2010

20 Government Digital Service, "Mike Bracken appointed as HMG Executive Director for Digital", May 2011

21 HM Government, "Directgov and Business Link"

22 Design Museum, "Designs of the Year 2013", 2013

23 The Network for the Post-Bureaucratic Age, "Better for Less", September 2010

24 Government Digital Service, "Liam Maxwell and IT Reform Group join GDS", December 2012

- The Government ICT Strategy (March 2011) and Strategic Implementation Plan (October 2011).[25, 26] This outlined the government's plans to reduce waste and project failures, create a common ICT infrastructure for government, to use ICT to enable and deliver change, and to strengthen governance. The government also published supplementary strategies on G-Cloud, End-User Devices, ICT Capability and Green ICT.[27]
- The launch of the Government Digital Strategy (November 2012), Design Manual and Digital-by-Default Service Standard (April 2013).[28, 29] The strategy sets out how the government will achieve over £1 billion of savings annually by making everyday transactions digital. It also sets out plans to improve digital skills across the Civil Service, in line with the Civil Service Reform Plan.
- The publication of the Government Shared Services vision (July 2011) and strategic plan (December 2012).[30, 31] This envisages unlocking significant savings and performance improvements by consolidating back office transactional services, standardising processes and leveraging IT, buildings and people across government and arm's length bodies.
- The Read Review of Management Information in Government (July 2012).[32] This made recommendations to strengthen the collection and quality assurance of management information, as a foundation for improving operational efficiency across government.
- The Civil Service Reform Plan (June 2012), external review of lessons from overseas (June 2013, led by IPPR), and one-year on progress review (July 2013).[33, 34, 35] This set out how the Civil Service will need to change to meet current and future challenges. Amongst other things it included proposals to boost capability and performance management, reiterated the government's commitment to digital-by-default for public services, and introduced a presumption in favour of open policymaking.
- The Open Public Services White Paper (July 2011) and Progress Update (July 2012).[36, 37] The white paper set out the government's vision for public service reform based on five principles: choice and control, decentralisation, diversity, fairness and accountability. The intention is to transfer power from Whitehall and put it in the hands of people and staff.
- Participation in the Open Government Partnership (with the UK as lead co-chair from September 2012–2013).[38] The UK's priorities include demonstrating the importance of transparency, communicating the opportunities of open government and building stronger working relationships between governments and civil society.
- The Open Data White Paper (June 2012), the launch of the Open Data Institute (December 2012), and the signing of a G8 Charter on Open Data (June 2013).[39, 40, 41] The white paper reiterated the government's commitment to transparency and to opening up public data for economic benefit. It also set out proposals to build greater trust in public data, and to get smarter at sharing data within the public sector.
- The Shakespeare Review of Public Sector Information (May 2013) and government response, published alongside the Information Economy Strategy (June 2013).[42, 43] The review recommended government develop a national data strategy as part of a concerted effort to help the UK get ahead in the next

25 Cabinet Office, "Government ICT Strategy", March 2011

26 HM Government, "Government ICT Strategy – Strategic Implementation Plan", October 2011

27 HM Government, "Government Cloud Strategy", "Government End User Device Strategy", "Government ICT Capability Strategy", "Greening Government: ICT Strategy", March 2011

28 Cabinet Office, "Government Digital Strategy", November 2012

29 HM Government, "Government Service Design Manual", April 2013

30 Cabinet Office, "Government Shared Services: A Strategic Vision", July 2011

31 HM Government, "Next Generation Shared Services: The Strategic Plan", December 2012

32 Read, "Practical Steps to Improve Management Information in Government", July 2012

33 HM Government, "The Civil Service Reform Plan", June 2012

34 Institute for Public Policy Research, "Accountability and Responsiveness the Senior Civil Service: Lessons from Overseas", June 2013

35 HM Government, "Civil Service Reform Plan: One year on report", July 2013

36 HM Government, "Open Public Services White Paper", July 2011

37 HM Government, "Open Public Services 2012", July 2012

38 HM Government, "Co-chair vision", September 2012

39 HM Government, "Open Data White Paper: Unleashing the Potential", June 2012

40 Financial Times, "Turning data into money: the Open Data Institute launches", December 2012

41 G8, "Open Data Charter", June 2013

42 Shakespeare, "An Independent Review of Public Sector Information", May 2013

43 HM Government, "Information Economy Strategy", June 2013

stage of the digital revolution. This is being taken forward in the government's Information Economy Strategy, which also set out plans for continuing to transform public services, to do more on digital skills and inclusion, and for developing a data capability strategy in partnership with industry and academia.

The devolved administrations have also pressed ahead with reform. The Scottish Government's programme runs under the *Scotland's Digital Future* banner, and is built around four main themes of connectivity, digital public services, the digital economy and participation.[44, 45] The Welsh Government's programme is set out in *Delivering a Digital Wales*, with five themes of inclusivity, skills, the economy, public services and infrastructure.[46] In Northern Ireland (whose staff are not part of the home civil service) strategies have been published on topics including information services, channels and digital inclusion.[47]

Across all of this, the core ambition is to make government digital-by-default, which the Government Digital Strategy defines as follows:

> *"By digital by default, we mean digital services that are so straightforward and convenient that all those who can use them will choose to do so whilst those who can't are not excluded."*[48]

After an initial focus on strategy development and fixing publishing, the government is expected to push hard on delivery for the remainder of its term. The initial drive on transactions is expected to deliver savings of around £1.7 billion a year (£1.1 billion cost savings for government, primarily in lower staff requirements, and £600 million in cost savings for citizens), with a focus on the 25 exemplars shown in Table 1.[49, 50]

If this and the government's broader drive for transformation is successful then by 2015 the digital government landscape should include:

- All government publishing activities consolidated on to GOV.UK
- The 25 "exemplar" transactions redesigned to meet the new digital-by-default service standard
- A significantly leaner, cloud-first approach to the way government buys IT products and services
- A federated identity assurance process that works across government
- Digital leaders and enhanced digital capability in all the main departments and devolved administrations
- More people choosing to interact with government online, with steps taken to help people to access services offline where necessary
- Consistent management information for transactional services collected on a routine basis and used to refine service delivery
- Policy teams regularly using digital tools and techniques to engage with and consult external partners and the public

This is underpinned by a new approach to government technology that more clearly distinguishes between commodity products and services, back office activity, mission IT systems and digital public services.

44 Scottish Government, "Scotland's Digital Future", March 2011

45 Scottish Government, "Scotland's Digital Future: Progress Update", October 2012

46 Welsh Government, "Delivering a Digital Wales", December 2010

47 Department of Finance and Personnel, "Information Strategy and Innovation Division Publications"

48 Cabinet Office, "Government Digital Strategy", November 2012

49 Cabinet Office, "Digital Efficiency Report", November 2012

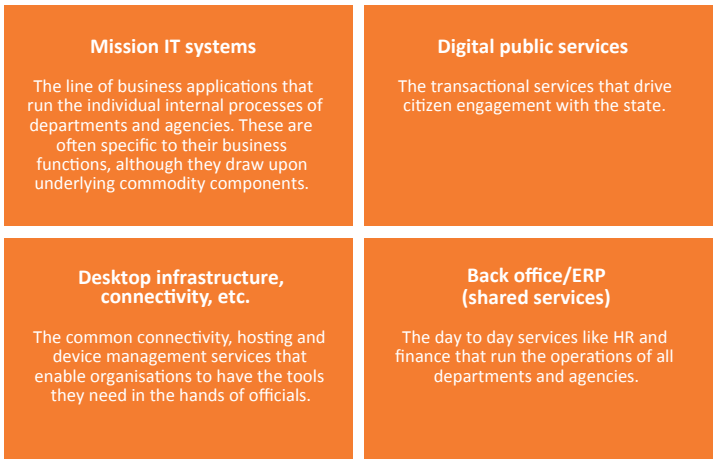
50 Cabinet Office, "Digital Transformation"

Table 1: Digital transformation

	Transaction	Volume	Department responsible
1	Electoral registration	47 million confirmed on the electoral register in the first year	Cabinet Office
2	Apprenticeship applications	1.2 million applications a year	Department for Business, Innovation & Skills
3	Redundancy payments	270,000 transactions a year	Department for Business, Innovation & Skills
4	Patent renewals	380,000 renewals a year	Department for Business, Innovation & Skills
5	Property register	598,000 customer requests a year	Department for Business, Innovation & Skills
6	Student finance	1.3 million students supported	Department for Business, Innovation & Skills
7	Waste carrier registration	40,000 applications a year	Department for Environment, Food & Rural Affairs
8	Rural support (Common Agricultural Policy)	105,000 applications in first year	Department for Environment, Food & Rural Affairs
9	View driving record	6 million driver enquiries a year	Department for Transport
10	Personalised registrations	1.6 million transactions a year	Department for Transport
11	Vehicle management	18 million transactions a year	Department for Transport
12	Claim Carer's Allowance	3.2 million carers supported	Department for Work & Pensions
13	Claim Personal Independence Payment (PIP)	2 million people supported	Department for Work & Pensions
14	Universal Credit	10 million adults supported	Department for Work & Pensions
15	PAYE for employees	2 million employees a year	HM Revenue & Customs
16	Digital self-assessment	10m registered for self-assessment	HM Revenue & Customs
17	Business tax dashboard	2.5 million registered for corporation tax	HM Revenue & Customs
18	Agent online self-serve	120,000 tax agents	HM Revenue & Customs
19	Registered traveller	7.8+ million people a year	Home Office
20	Criminal record check	3.9 million enhanced checks	Home Office
21	Visit visa applications	3.4 million visas issued a year	Home Office
22	Civil Claims	1.85 million claims a year	Ministry of Justice
23	Employment tribunal fee payment	200,000 transactions a year	Ministry of Justice
24	Prison visit booking	1.5 million visits a year	Ministry of Justice
25	Lasting power of attorney	200,000 applications a year	Ministry of Justice

Figure 1: Government technology

Functional areas from the Government Service Design Manual

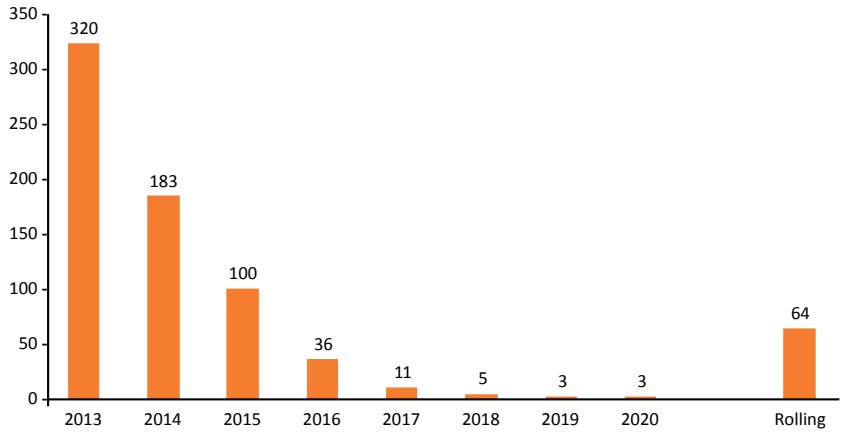


Source: Government Digital Service

Transition to this new world should happen quickly. Our analysis of a sample of 725 outstanding government technology contracts totalling £1.95 billion a year, based on data released by central government departments in response to requests made under the Freedom of Information Act, suggests that the majority will expire in the next two years.

Figure 2: Government technology contracts

Sorted by expiry date, sample of 725 contracts across 28 departments and agencies



Source: Government departments, Policy Exchange analysis

Achieving the government's goals for 2015 will not be a trivial undertaking, and one should not underestimate the effort that will be required over the next two years. Nevertheless the broad direction of travel is right, and the government

is establishing a good track record of delivering in the digital arena. A recent survey conducted by Civil Service World found that, out of all the agendas set out in the Civil Service Reform Plan, this area was progressing fastest.[51]

What follows in this report is not a detailed critique of the government's programme of activity for the months ahead. Instead, the focus of the remainder of this report is on future strategy. Achieving everything set out above is enormously important. *It is also only the beginning*. As we argued in the introduction to this report, the internet is driving fundamental changes in our economy, and organisations – public and private alike – need to innovate to survive.

51 Civil Service World, "Fast progress on digital agenda", July 2013

3
The End of the Beginning

Much progress has been made in recent years, but there is no time for complacency. Despite all of the improvements being made to digital publishing, transactions and procurement, many of the deeper ways in which government operates have not changed in any substantive way for many decades. Agitating to reform the public sector is an evergreen topic for politicians, but examples of genuine transformational change can be elusive (and tinkering with the machinery of government most certainly does not count).

This does not mean that transformational change is impossible. But we do need to start thinking differently about the class of problem that we are trying to solve.

Sprinting to catch up

Start with the basics. Government – and the wider public sector – exists not for its own sake but rather to serve the interests, and meet the needs, of society. As with organisations in the private sector, the development of better tools and the discovery of more efficient ways to get things done means that productivity tends to rise over time. Steadily increasing productivity, driven by technological progress and accelerated by the effects of compound growth over long horizons, is the reason our overall standard of living is so much higher today than in previous decades.

Productivity growth is not uniform across different parts of the economy, but instead varies by sector.[52] Unfortunately, measuring productivity growth for the public sector is not straightforward. Although we can count inputs relatively easily, counting outputs is harder. For private sector activity, outputs are traded in the marketplace, with prices and quantities readily observable. The outputs of many public sector activities have no publicly observable price, so proxy measures must be devised.[53]

Fortunately, the UK publishes National Statistics on productivity, broken down across the different parts of the economy, and we can use these to establish a best estimate for how public sector productivity has been changing over time.

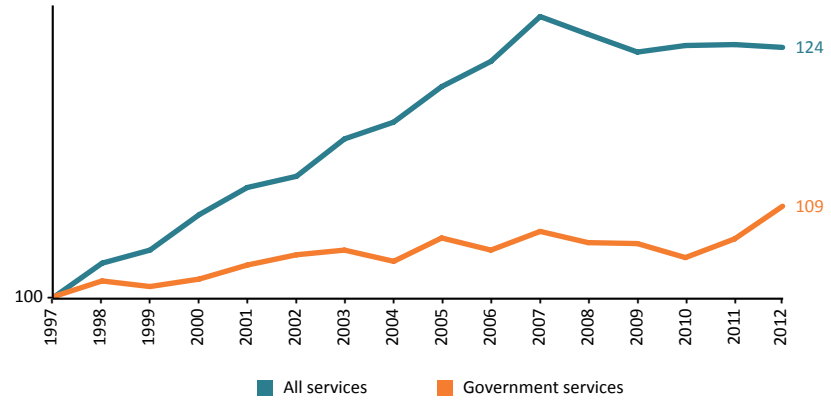
Figure 3 shows the evolution of output per job across the services sector as a whole alongside output per job for the government services sector in particular. Taking 1997 as our baseline, overall output per job in the services sector increased by 24% over the 15 years to 2012. For government services – primarily public administration, defence, education and health – output per job increased by 9% over the same period.

52 Bank of England, "UK labour productivity since the onset of the crisis — an international and historical perspective", 2012

53 Office for National Statistics, "Public service productivity estimates: Frequently Asked Questions"

Figure 3: Output per job

Services sector, seasonally adjusted, 1997 = 100

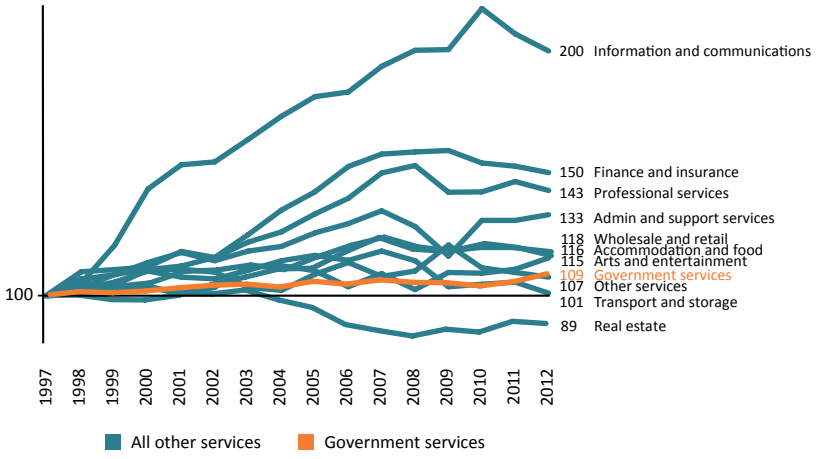


Source: National Statistics, Policy Exchange analysis

Figure 4 shows in more detail how output per job has changed across all of the major components of the services sector. Over the 15 years since 1997, output per job increased by 100% in information and communications services, 43% in professional services and 33% in administration and support services. The only sector that recorded a decline in output per job was real estate services.

Figure 4: Output per job

Services sector, seasonally adjusted, 1997 = 100



Source: National Statistics, Policy Exchange analysis

Speaking at Policy Exchange, the Minister for the Cabinet Office suggested that if productivity in the public sector had risen by an amount comparable to that in the private sector over the period from 1997, the structural deficit in 2010 would have been half what the coalition government inherited.[54]

So prima facie there has been a significant shortfall in productivity growth in the public sector compared to other service sectors of the economy. This is not a new phenomenon; in his 1997 paper Liam Byrne asked:

54 Cabinet Office, "Ministers and mandarins: speaking truth unto power", June 2013

"Why, when their work is so similar in form, can banks reduce their headcount by 17% since 1989, and central government only manage 6%?"[55]

Barring very serious problems with the data, our leading hypothesis is that the public sector has been slower and/or less effective than the private sector when it comes to taking advantage of modern technologies and business processes. The Minister for the Cabinet Office cites the DVLA as a case in point. Despite some very real improvements in digital delivery in recent years, every day two articulated trucks filled with letters and paperwork still pull into their headquarters in Swansea:

"There's almost nothing the DVLA does that couldn't be done digitally. Yet a huge amount is still being done on paper. There are huge numbers of people running a clerical paper processing factory."[56]

Other parts of government fare little better. If you choose to complete a passport application form online, when you press submit in your web browser, HM Passport Office will print the form out and post it to you to sign and send back.[57] Speaking ahead of the 2013 Spending Review, the Chancellor of the Exchequer revealed that the Crown Prosecution Service prints one million sheets of paper every day.[58]

All of this gives us reason to think there is scope for significant productivity gains if the public sector can catch up with progress already made in other parts of the economy. But the game ahead is not just about closing a productivity gap that has been allowed to persist over the past decade. Stepping back we see two major trends that, in the years ahead, will have far reaching implications for the way the public sector should be organised and run.

The new digital age

The first major trend is the acceleration toward **ubiquitous availability of general purpose digital technologies**.

The internet is a classic general purpose technology, enabling things that weren't possible before it existed, improving others massively, and providing a platform for ongoing innovation. Personal computers, tablets and smartphones, modern operating systems, web browsers, fixed and wireless broadband, social networks, cloud computing and storage, additive manufacturing and more all fall into the same broad category of enabling technologies.

What's more, new general purposes technologies are entering mainstream use faster than ever before. It took more than half a century for traditional telephones to penetrate half of US households. It took just over a decade for the internet to reach into half of US households, and less than a decade for smartphones to reach this milestone.[59]

The UK is already a digital nation. The internet contributes more to our GDP than it does in any other G20 country.[60] More than eight in ten people in the UK use the internet, and nearly six in ten own a smartphone.[61, 62] Although a significant minority of people remain effectively offline – the charity Go ON UK estimates that there are still 16 million adults in the UK who lack basic online skills, and the Tinder Foundation's UK Online Centres cater to demand in over 5,000 communities – this problem, whilst an extremely important one, will recede over longer horizons.[63, 64] In their book *The New Digital Age*, Eric Schmidt and Jared Cohen sum up as follows:

55 Fabian Society, "Information Age Government: Delivering the Blair Revolution", October 1997

56 Guardian, "Francis Maude: digital transformation of government has begun", January 2013

57 HM Passport Office, "Online passport application"

58 BBC Radio 4 Today programme, May 2013

59 Asymco, "When will smartphones reach saturation in the US?", April 2012

60 Boston Consulting Group, "The $4.2 Trillion Opportunity: The internet Economy in the G-20", March 2012

61 Office for National Statistics, "Internet Access Quarterly Update, Q1 2013", May 2013

62 Ofcom, "International Communications Market Report 2012", December 2012

63 Go On UK, "UK Snapshot: The Size of the Opportunity"

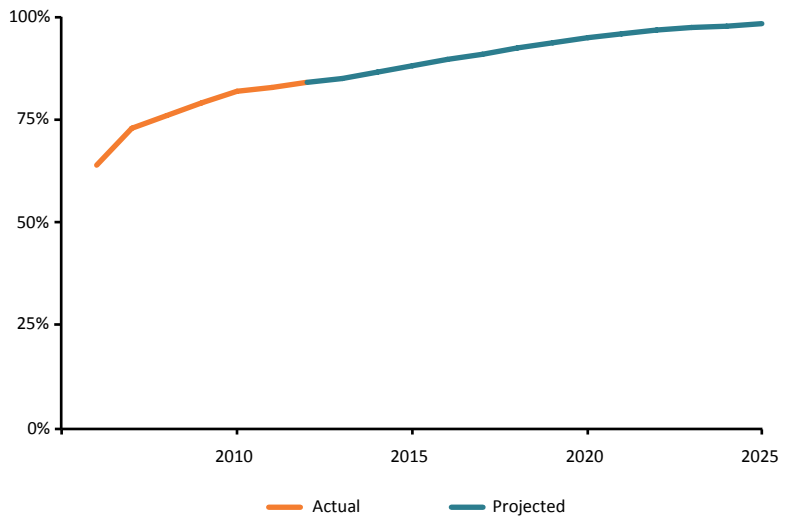
64 Tinder Foundation, "What we do"

"In the future, information technology will be everywhere, like electricity. It will be a given, so fully a part of our lives that we will struggle to describe life before it to our children."[65]

Figure 5 illustrates how internet use in the UK may evolve over the years ahead. Based on current trends, we expect the proportion of adults who have used the internet to rise from 84% in 2012 to 88% by 2015 and 95% by 2020.

Figure 5: A nation of internet users

Proportion of adults (aged 16+) who have used the internet



Source: National Statistics, Policy Exchange analysis

This projection has two main drivers: rising internet use over time within cohorts, and higher mortality rates among older cohorts (who are less likely to be internet users in the first place). It should not be read as a precise forecast – the input data is far from perfect – but nevertheless we think it represents a reasonable scenario to work with. Table 2 shows how the figures by age and gender may evolve if current trends continue.

Table 2: Internet use, actual and projected

Men	2012	2020	Women	2012	2020
16–24	99%	99%	16–24	99%	99%
25–34	99%	99%	25–34	98%	99%
35–44	97%	99%	35–44	97%	99%
45–54	92%	99%	45–54	92%	99%
55–64	84%	99%	55–64	82%	99%
65–74	68%	98%	65–74	58%	88%
75+	36%	83%	75+	23%	61%

65 Schmidt and Cohen, "The New Digital Age", 2013

One important aspect of rising internet use will be the emergence of handsets as the primary means for getting online. In the years ahead, whilst some people will still be introduced to the internet sitting in front of a monitor, keyboard and mouse, many more will acquire a smartphone or tablet and start using the internet without the physical and emotional baggage that is sometimes attached to learning to use a computer. Some studies already show mobile internet use overtaking fixed connections.[66] Alongside this, the proliferation of small, high-quality and touch-sensitive displays is starting to drive a revolution in responsive design, accessibility and usability.

As part of our research, we asked people working in the public sector about the way they use technology in their jobs. In the past, the performance of workplace ICT was well ahead of what the average person could realistically aspire to own in a personal capacity. This is no longer necessarily the case: today 37% of public sector workers think that the technology available in their workplace is worse (or significantly worse) than the technology they have access to at home. Restrictions on what people can do with their work devices are also starting bite. Around half of people are subject to restrictions on general web browsing and/or the specific use of social media. When the people facing these restrictions were asked about their impact, 39% said fewer restrictions on general web browsing would increase their productivity. Overall, 77% of people in the public sector do a job that requires them to use some form of mobile technology (e.g. laptop or smartphone), and of this group around one in ten use their own devices in direct contravention of rules designed to stop personal devices being used for work purposes. More detail on these findings is included at Annex B.

All of these observations are leading indicators of a more profound change in the role technology plays in our society. For the young adults today who grew up with the internet, digital technologies are part of the day-to-day fabric of life. Rather than being a special subject to master in a computer laboratory, technology is melting into the background as an enabler for the things that have always mattered in life – learning, connecting with family and friends, working, relaxing, and a million other human pursuits. We already describe our children as "digital natives" and the evidence bears this out: today one in three 3–4 year olds use the internet, and only 9% of 5–15s do not use the internet at all.[67]

This trend will open up two big opportunities for government. First, a workforce that is used to technology as part of day-to-day life and completely comfortable working with digital tools will provide a solid foundation for stripping away old, inefficient ways of working and for experimenting with new approaches. Second, a population at ease with a digital world will make it possible to entertain radical changes in the way public services are delivered without compromising on quality, engagement or accessibility.

Make things open, it makes them better

The second major trend is the shift toward **open as the default, not just in the pure technology arena but across our economy and society**.

As well as being a classic general purpose technology, the internet's remarkable impact is rooted in its open foundations. A range of open standards protocols – TCP/IP, HTTP, SMTP, HTML, XML, PNG and others – underpins the almost universal accessibility of the World Wide Web and the rich variety of information and services we now enjoy.

66 Economist, "Live and unplugged", November 2012

67 Ofcom, "Children and Parents: Media Use and Attitudes Report", October 2012

The internet has also provided a platform for collaboration on complex projects at scales that were previously unimaginable (and with many contributors doing so without any formal remuneration). The most famous example of an open source software project is the Linux kernel – the source code for which may be used, modified and distributed, commercially or non-commercially, under the terms of the GNU General Public License.

Box 1: Building Linux

In 1991, Linus Torvalds began developing his own operating system, as a hobby, which eventually became the Linux kernel. In 1994, version 1.0 of Linux was released. As of 2012, Linux had over 15 million lines of code and over 1,300 contributing developers (including Red Hat as the biggest corporate contributor, and Microsoft in the top 20).[68]

Building directly on Linux, the Android operating system has dramatically changed the landscape of the smartphone market. Development by Android, Inc. began in 2003 by its four founders, and was acquired by Google in 2005. By 2012, it was estimated that Android had a 75% share of the global smartphone market, and in just four-and-a-half years, 900 million Android devices have been activated.[69, 70]

The highly collaborative nature of the early internet lives on today as people share their experiences with medical treatments on PatientsLikeMe, post reviews of hotels and restaurants on TripAdvisor, debate and discuss on forums and social media, and use peer-to-peer networks like eBay and AirBnB to disintermediate traditional businesses. Technologies like Git that were originally developed for software development are now being adapted for other contexts like writing, where the same principles of distributed version control and management are highly applicable. The cryptographically secured digital currency Bitcoin has openness at its core: in addition to open source client software, the system's integrity relies on placing the entire currency's (anonymous) transaction history in the public domain.

Box 2: The free encyclopedia

Launched in 2001, the Wikipedia project seeks to provide "every single person ... free access to the sum of all human knowledge".[71] It is now the most comprehensive and most widely used reference project ever created. It boasts over 26 million articles in 285 languages, written by over 39 million registered users and many more anonymous contributors. For the English language version of the site, there are over 19 million registered users and over 4 million articles.[72]

Wikipedia is the sixth most popular website in the world, with 11% of all internet users visiting the site at least once a month. Its founder Jimmy Wales expects it to become the default source of information for today's youngest generation.[73] Remarkably, providing this global service cost just $29 million (£19 million) in 2012.[74]

The internet has also been the place where the emerging open data movement has flourished. The Open Knowledge Foundation sets out the principles that define "openness" in relation to data and content:

68 Linux Foundation, "Who writes Linux?", April 2012

69 Gartner, "Sales of mobile phones Q1 2013"

70 Google, "900 million Android activations", May 2013

71 Wikipedia, "Wikipedia: Purpose"

72 Wikipedia, "Wikipedia: About"

73 Studlife, "Founder explains impact of Wikipedia", March 2011

74 Wikimedia Foundation, "Annual Report", 2012

"A piece of data or content is open if anyone is free to use, reuse, and redistribute it – subject only, at most, to the requirement to attribute and / or share-alike."[75]

In principle, any organisation can provide open data and content, and the internet makes it possible to publish this to a global audience, often at negligible marginal cost for the data owner. For the UK public sector, the Open Government Licence encourages people to use and re-use information covered by the licence freely and flexibly, with only a few conditions.[76] In the United States, President Obama has signed an Executive Order making open and machine-readable data the default for government information.[77] Open data is already driving a revolution in access to actionable insights, from better maps and more useful transport advice to more accurate weather forecasts and increased transparency around public spending.

Box 3: Keeping London moving

Transport for London (TfL) has, since 2010, provided public access and licenses for raw, real-time data about its services. Example data sets include Live Traffic Camera Images, Bus Stop Locations, London Underground Passenger Counts and the Journey Planner API.[78]

By opening up data free of charge, TfL has ensured that the apps provided by the market use the most up to date data available. Consumers benefit from a wide range of apps and services, and are able to access information in whatever way suits them best. This enables them to make better choices about when and how they travel. Moreover, by allowing developers to build apps and services, TfL can focus its efforts on its core responsibility of running the capital's transport network.[79]

The core principles that support open standards, open source and open data and content are applicable far beyond the technology arena. As the internet equalises access to information and opens up new ways for people to interact, demand for more transparent, effective and accountable government is rising both here and around the world. In 2011 the UK was one of eight founding members of the Open Government Partnership, all of whom endorsed an Open Government declaration with commitments on information, participation and accountability.[80]

Box 4: Making aid clearer

The Department for International Development (DfID) was ranked the best in the world for its contribution to the International Aid Transparency Index (IATI).[81] The IATI is a voluntary initiative that involves both donor and developing countries, in order to improve the transparency of aid in international development.

Donors publish their aid information in IATI's agreed electronic format on their website, with a link to the central registry, which acts as an online index of links for all of the raw data published to IATI. Not only does this exemplify the use of data for the transparency agenda, it also demonstrates international and cross-sector collaboration.

75 Open Knowledge Foundation, "Open Definition"

76 National Archives, "Open Government Licence"

77 White House, "Executive Order: Making Open and Machine Readable the New Default for Government Information", May 2013

78 Transport for London, "Developer's Area: Get Data"

79 Greater London Authority, "Economic benefits of data release", July 2010

80 HM Government, "Co-chair vision", September 2012

81 HM Government, "Transparency: DFID ranks top in latest aid index", October 2012

This trend toward openness is inexorable. Some organisations and governments will resist, but at best all they can hope to achieve is to maintain the status quo for a little longer. A more open world presents huge opportunities for public sector reform. A genuinely open government that responds to the growing demand from citizens for accountability and participation will deliver better policies and foster stronger communities. And in an open, networked world, we will discover that many of the things that were once the sole preserve of governments are, in fact, sometimes better done by someone else entirely.

4
Take the Red Pill

The core of this report is focused on the intersection of the two trends discussed earlier – ubiquitous availability of general purpose digital technologies and the inexorable trend toward openness – with the future of government in the UK.

The recommendations that follow represent a synthesis of our opinion following an extensive period of research, debate and analysis. Although they draw on conversations with and input from a wide range of people and organisations, they represent our view of the road ahead – and in pulling them together we have necessarily taken a stance on issues that divide the policy debate. More background on our research approach is set out at Annex A.

Before turning to the detail, there are a few important things to bear in mind.

First, the majority of our recommendations are focused on central government. For many of the issues we tackle this helps to keep the discussion tractable. Many (if not all) of the principles have applicability more widely in the public sector. Taking the framework we provide here and exploring the deep implications for, say, local government or the NHS would be a promising area for further research.

Second, although this is resolutely a report about digital government, few of our recommendations are about specific technologies. As is so often the case when it comes to public sector reform, this is really a story about people, leadership and organisational change. Technology is both the context and the enabler for radically better government, but it is how we choose to embrace it that will make the difference between success and failure.

Third, this report deliberately stops short of providing a detailed technical blueprint for each of the recommendations we make. The primary purpose is to lay out new ideas to provoke, stimulate and push forward the debate about the future of government. Indeed, the very philosophy of government that we advocate suggests that the detail is best developed through open policymaking and agile, data-driven experimentation.

What follows, then, is our candid, strategic advice for leaders who are ready and willing to drive radical transformation and inspire a new generation of government for the digital age. It is also a wake-up call for those who think they can pay lip service to this agenda but keep doing things the same, tired way.

We have brigaded our recommendations under three main themes:

- Root and branch digitisation of government activity
- Developing a total data approach for government
- Restoring a culture of excellence and innovation in government

The following chapters explore each of these in turn, after which we discuss how to bring this agenda together into a coherent strategy for remaking government.

5
Year Zero

The huge improvements we are seeing today in government publishing and online transactions are important hygiene factors for the digital age. But in many areas of government activity, the way things work behind the scenes continues to lag behind the rest of the economy. So we should be thinking now about 2015 as *year zero* for a once-in-a-generation push on technology-enabled public sector reform. This should go even further than driving the digital-by-default philosophy all the way through government. The opportunity cost of continuing to support analogue ways of doing business is not zero, and in some cases government will need to be much more aggressive in forcing a change in the way things are done, for the greater good.

Digital, full stop

There are three big areas of interaction where an ambitious government should start thinking about switching entirely to digital. Martha Lane Fox hinted at this endgame in 2010 in her review of government digital activities:

> *"The acid test for Directgov is whether it can empower, and make life simpler for, citizens and at the same time allow government to turn other things off."*[82]

Inside government

The first test is the way government communicates internally. There are currently around 400,000 civil servants working across over 100 central government departments, agencies and non-departmental public bodies.[83] To all intents and purposes they already have access to familiar, easy-to-use technology capable of sending messages instantly, securely and at close to zero marginal cost. In most cases this will be using standard corporate equipment, though for many users a bring-your-own-device solution may deliver a superior experience. Even the traditional advantages of paper for office work and in the field (comfortable to read, easy to annotate) are falling away in the face of electronic ink displays and tablets. So whilst there will always be a role for paper – much the same way that many offices still have a token fax machine – its use should be eliminated for routine interactions within and between government departments. One interviewee told us:

> *"We have a lot of legacy issues in [a department like ours]; we have a system rooted in moving paper from place to place."*

Paper might not be the only casualty of reform. For many people working in modern office environments, an overload of email and meetings can be

82 Martha Lane Fox, "Directgov 2010 and beyond: revolution not evolution", October 2010

83 Civil Service, "Civil Service statistics"

a serious distraction and drain on productivity. As part of our research, we asked people working in the public sector about the way they use technology in their jobs. Only 54% said their organisation is efficient when it comes to using technology for collaboration, and 45% said their organisation was too reliant on email. Between around one third and one half of respondents said their organisation had difficulties with the following: keeping track of paper documents (39%), keeping track of electronic documents (31%), and coping with a large number of meetings and other demands on their time (47%).

Box 5: Eliminating email

Atos Consulting, a global IT services company based in France, made a commitment in 2011 to eradicate internal email messaging within its company. The decision coincided with research published by Atos suggesting that workplace productivity is in need of a revolutionary change and that email is one of the technologies wasting employees' time and stifling efficiency. Atos have encouraged staff to use newer communication technologies, including its own cloud-based social messaging platform, blueKiwi, instead of email.[84] It reported that the initiative immediately reduced the number of emails sent by as much 10%–20%.[85]

The zero email and blueKiwi scheme has been successfully exported to a number of government organisations in France. The early examples of its adoption show significant boosts in productivity, with the workforce benefitting most from an increased speed of transaction as well as the creation of a shared knowledge base within the cloud communication platform.[86] This is consistent with comScore research showing that people are increasingly communicating via social media channels at the expense of email services. [87]

Some aspects of travel may go the same way. Although face-to-face contact will remain important, advances in telepresence fidelity have already made it feasible to conduct long-distance virtual meetings in many instances.

This is not all good news for the environment – at least some of the savings from reduced paper consumption and long-distance travel will be offset by emissions from the data centres and connectivity required to support a digital government. But overall, we would expect digitisation to deliver significant savings in terms of time, paper, money and carbon. Along with a hearts-and-minds effort within organisations, there is likely to be an important role for the Treasury in driving this agenda: changing long-standing habits will be hard, and sharp financial incentives will probably be needed to focus minds. Progressively phasing out budgets for paper and printing, and requiring departments to make up for any overspend by cutting staff numbers, might be one way to ensure progress.

Jeremy Hunt, the Secretary of State for Health, has already set out an aspiration to make the NHS a paperless organisation by 2018.[88] Speaking at Policy Exchange he contrasted the digital revolution in the airline industry – which transformed a cumbersome, paper-based booking process into one where anyone, anywhere in the world, can search and book seats on any flight

84 Atos Consulting, "Doing more with less: the new productivity paradigm", April 2012

85 Atos Consulting, "Smarter working with zero email", October 2012

86 Ibid.

87 comScore, "US Digital Future in Focus", February 2012

88 Department of Health, "From notepad to iPad: technology and the NHS", January 2013

in minutes – with the change that is now starting to take hold in healthcare. Importantly, the developments that he envisages apply both to the way the NHS works internally, and the way that it interfaces with patients. The potential for technology to change the way government interacts with citizens is our next topic for discussion.

Government and citizens

When it comes to interactions between government and citizens, the guiding principle today is digital-by-default, as set out in the Government Digital Strategy. In the years ahead it will be time for government to take this a stage further. Over the time horizons we are concerned with, almost everyone in the UK will have access to the web. For many the primary interface may well be a smartphone rather than a desktop computer, but even then the experience on offer is likely to be far richer than many of the applications we are used to today. The balance is already starting to shift; one interviewee told us:

> *"We are getting to the point where it is harder not to do things online."*

In this world, government should be bold about switching exclusively to digital for interactions that do not require a face-to-face interaction with the public. In all sorts of instances, from sending an enquiry into a government department to applying for a driving licence or filling in a tax return, doing the entire process online will be faster and cheaper with no material downside. The government's Digital Efficiency Report found that for some central government services, the average cost of a digital transaction was 20 times lower than the cost of a telephone transaction, 30 times lower than the cost of a postal transaction, and 50 times lower than the cost of a face-to-face transaction.[89] Another interviewee told us:

> *"Technology changes the core business of government and what public services need to offer. There are sometimes online solutions that mean a person never has to enter the system in the same way in the first place."*

As well as being significantly cheaper to run, digital interactions can also deliver a better, faster experience for users that gets closer to meeting their needs. This is particularly important as user expectations about service quality are dragged inexorably upward by improvements in consumer technologies and services. Writing about citizen satisfaction with public services, Craig Baker from the Boston Consulting Group captured the challenge thus:

> *"People's experiences with innovative private companies, such as Apple, are significantly raising expectations of how all organisations should be able to perform."*[90]

Of course, the face-to-face element will remain critically important for some interactions between the government and the public, and in these cases it should not be abandoned. Advisors at Jobcentre Plus, for example, will still need to meet clients in person to build rapport, even if many of the follow-up activities and interactions can move online. So rather than strip the personal element out of

89 Cabinet Office, "Digital Efficiency Report", November 2012

90 Guardian, "How the public sector can give more satisfaction", December 2011

interactions with government, digitisation should be seen as a way to strengthen it, clearing away inefficient activities so that staff can focus on intensive face-to-face contact where it is needed most and makes the greatest difference to people's lives.

Box 6: A trip to the bank

The typical branch in a high street bank looks very different today compared to ten years ago. Long counters (and often long queues) used to be the defining features of many bank branches. Today, most branches have extensive automation and customers self-serve for routine transactions like balance enquiries, bill payments, cash withdrawals and cheque payments. Counter services are often still available but have been significantly scaled back to cater only for cases that require face-to-face assistance or additional security verification.

Some banks have stepped out of having a physical presence altogether. First Direct (a division of HSBC) leads on its internet banking offer, with a telephone option for customers that need it. Savings from a more efficient operation can be recycled back into better deals for customers and improved customer service: First Direct regularly tops tables for customer satisfaction.[91]

This will be a challenging agenda for government to push, but that should not be allowed to become an excuse to go slow on reform. One interviewee explained part of the challenge as follows:

> *"Digital-by-default is about the user. People in my department will ask 'What does the minister want?' but we need to learn to take a step back and ask 'What about the user, what does the user want?'"*

At present, a subset of high-volume government transactions (those at DWP, the Home Office and HMRC) costs nearly £6 billion a year to run.[92] If the trade-off is between spending scarce cash keeping mailrooms open at 30 times the equivalent online cost just to cater for people who prefer to fill in paper forms the old-fashioned way, or training and redeploying public servants so that they can deliver targeted face-to-face help for those with the most complex needs, then the right thing to do should be clear. More broadly, the point of principle is to focus on outcomes:

> *"Communication is a challenge. When citizens are seeing cuts and austerity, it is difficult for them to see why spending money on a digital service or an app is a priority. So the focus shouldn't be on the technology, but on the outcomes it will provide."*

In practical terms, to help encourage people to change their habits it might be worth thinking about more directly recycling some of the benefits back to citizens. One possibility would be to use some of the savings from closing analogue interfaces to fund a tax refund, and to bring this to people's attention using the planned new personal tax statements. In the transition to extensive digitisation people might build up eligibility for this by choosing digital options

91 UK Customer Satisfaction Index, "The state of customer satisfaction in the UK", January 2013

92 HM Government, "Transactions Explorer" (alpha release)

when they interact with government. Alternatively, borrowing from behavioural economics theories of loss aversion, people might forfeit eligibility by sticking with analogue channels once a digital alternative is available. With around 30 million income tax payers in the UK, for every additional £1 billion saved it would be possible to refund each of them £33 a year.

We recognise that, even with the advances in devices and internet access that we expect to see over the years ahead, a small minority of people are likely to remain unable independently to access government digital services. The government is looking to the private, voluntary and community sectors to provide assisted digital support for people who are not online and for people who are online but have limited digital skills.[93] Providers will be contracted by government either to help these people use digital services themselves, or perhaps to input people's data on their behalf.

This is an essential part of the agenda, and for the avoidance of doubt we envisage a continued and important role for government in ensuring the most vulnerable are not excluded. As internet penetration increases, the need for this sort of support will decline, and it will not make sense for different parts of government to each provide their own offline support options. Instead, like the rest of the government's activities, assisted digital support should focus on user needs and be integrated with any other help and support an individual needs to lead their life.

Recommendations

1. **Eliminate paper for all interactions within and between government departments.** Moving paper around the country is slow, expensive and a waste of valuable staff time. Taxpayers deserve better than public servants struggling with mountains of paper and data entry when they could and should be doing their jobs.
2. **Switch exclusively to digital for public services that do not need a face-to-face interaction with the public.** Digital services are the only way to keep up with ever higher citizen expectations. Moreover, the average cost of a digital interaction is tens of times lower than doing the same thing on the phone or in the post. Some face-to-face contact will remain important and in these cases should be strengthened as a complement to digital services.

Government as a platform

As government digitises its activities and moves transactions online, people will increasingly expect interoperability with the other digital interactions and connections in their lives. For government this will mean thinking about the parallels between the way it operates online and the way many of today's most successful digital businesses have thrived as platforms for innovation and third party activity. As with the discussion around digitisation in the previous section, government has already started down this road, but there is much more to do. Activities like the current effort to build a federated identity assurance framework are important prerequisites for efficient and secure online government services.[94] As we think about the future of government as a platform, three big opportunities stand out: electronic purchasing, electronic

93 Cabinet Office, "Government Approach to Assisted Digital", December 2012

94 Cabinet Office, "Privacy and Consumer Advisory Group: Draft Identity Assurance Principles", June 2013

proofs and Application Programming Interfaces (APIs) for all government services.

Electronic purchasing

Government activity will always make up a significant portion of the economy, and so the way government interacts with its commercial partners, suppliers and corporate stakeholders plays an important role in setting broader norms and expectations. The current government is already reforming procurement to leverage the government's purchasing power, and in the ICT arena an increasing number of services can now be acquired on a pay-as-you-go basis from suppliers via the government CloudStore.[95] One interviewee pointed out:

> *"This isn't just about IT or contracts, it is about getting government to operate more like a digital enterprise – something the government can't afford not to do."*

There are, however, still large potential savings from digitising the way government interacts with its suppliers – and this goes broader than spend on ICT. Within government, moving to widespread electronic purchasing would deliver two significant sources of savings. First, increased transparency on prices would promote competition between suppliers and make it easier for buyers to select the best price for a given product. Speaking earlier this year, Francis Maude and Stephen Kelly, the Government COO, cited one instance where the Cabinet Office was charged £57 for a power cable that is available on Amazon for £20 and can be bought wholesale for £8, illustrating how poor price discovery can currently be.[96] Second, an easy-to-use marketplace with extensive automation and electronic invoicing would strip away some of the need for large procurement functions in individual government departments – and in many cases responsibility for purchasing could be pushed back down to the user.

Box 7: A platform for interactions

Paper invoicing has been banned in the public sector in Denmark since 2005. The Danish company Tradeshift operates an online, open standards platform for e-invoicing. Accounts are free, with the company earning a return on enterprise deployments and a commission on third-party apps developed for the platform. The platform supports all sorts of commercial transactions and is not limited to business with government.[97]

Today 95% of Danish government invoicing goes through Tradeshift, which enabled the state to save €1 billion (£867 million) in its first 18 months of operation. It has also boosted efficiency, giving time back to around 50,000 government officials who had each been spending 20 minutes a day typing up invoices.[98]

Some electronic solutions are already used by parts of the UK public sector to eliminate manual processing of low value purchase orders and invoices. Participation is optional and is very low relative to total public sector spending. Nevertheless, research conducted by BDO found that a move to electronic purchasing could save organisations between 3% and 10% on the price of

95 HM Government, "G-Cloud: Cloudstore"

96 Independent, "Government wastes 'three days a year' waiting for old computers to start", June 2013

97 Pymnts.com, "Tradeshift Accelerates Growth with Free E-Invoices", June 2012

98 ComputerWorld UK, "Tradeshift CEO: UK government could save £852m moving to open e-invoicing", March 2013

low-cost, frequently purchased items (from a combination of accessing the best value deals and increasing competition for individual purchases). This work also found substantial potential for staff time savings as a result of more streamlined handling of purchase orders and invoices.[99]

The National Audit Office estimates that procurement expenditure in Whitehall was around £45 billion in 2011–12, with about one sixth of this categorised as common procurement (goods and services purchased by all departments, like office solutions, energy and travel).[100] Later this year a new Crown Commercial Service will take charge of the purchasing of common goods and services, taking advantage of bulk buying power and specialist negotiators to drive down costs.[101]

This makes a lot of sense for many areas of spend, and the introduction of a new team to advise departments on complex procurements goes with the grain of insourcing of capabilities that we discuss later in this report. But this approach will only be amenable for some areas of spending, and much government purchasing will remain decentralised. For the public sector as a whole, combined current and capital procurement stood at around £230 billion in 2012–13, with around £60 billion accounted for by the NHS, £20 billion by defence (much of which is spending on highly specialised and/or single use equipment), and £80 billion by local government functions.[102] When we are dealing with such large figures, even small improvements can be worth a lot. Achieving a price reduction of 10% on just 10% of government spending would be worth over £2 billion a year.

Shifting to electronic invoicing might also have significant knock-on benefits for the wider economy. The direct digital transfer of billing and payment information between suppliers and buyers is an important part of an efficient, modern, financial supply chain. If implemented extensively and based on open standards, the government could catalyse the widespread adoption of a common electronic invoicing approach across the entire economy. Research on electronic invoicing conducted by the European Commission has estimated the potential savings for European businesses from a successful electronic invoicing initiative at around €65 billion (£56 billion).[103]

Prove it

Take electronic proofs next. For many of the most important interactions in our lives, government is the authoritative entity that issues the credentials required to prove we are who we say we are, or do indeed have the attributes we lay claim to. At present these proofs are almost exclusively analogue: birth certificates, marriage certificates, exam and degree certificates, driving licences, P60s, P45s, car tax discs and so on. Simply moving transactions online will make a big difference to the efficiency with which an individual can interact with a particular government service, but in many cases a paper document may still be expelled at the final stage. In the meantime, almost every aspect of our lives – not just our interactions with government – is heading online and becoming increasingly connected. Many of our interactions with third parties require us to present government-issued proofs sooner or later, and whilst these proofs remain analogue this will always cause otherwise quick and cheap online processes to come grinding to a halt.

99 BDO / Procserve, "Digital procurement revealed as key to unlocking millions in savings", July 2013

100 National Audit Office, "Improving government procurement", February 2013

101 Cabinet Office, "New Whitehall central buying service to save more for taxpayers", July 2013

102 HM Treasury, "Public Expenditure Statistical Analyses 2013", July 2013

103 European Commission, "e-Invoicing"

Box 8: Access to health records

The US Department of Veterans Affairs offers a "Blue Button" within their password-protected online portals that gives veterans the option of downloading copies of their health records. The initiative has empowered veterans with the tools to manage their own health data and to take greater control of their transactions with health services and health care professionals. After 6 months in development, the initiative registered its millionth unique user downloading their health data in August 2012.[104]

The latest iteration, Blue Button+, gives users the ability to retrieve records in a human-readable and machine-readable format, enabling them to do everything from printing a physical copy to sharing it with a third party application.[105] As with the original initiative, this project was developed quickly, is explicitly user-centric, and has shown successful collaboration between the public and private sectors.

Concerns about personal data and privacy have, rightly, limited the government's willingness to proceed with a single national identity database. And whilst this may have held back the development of electronic proofs in the past, the technology now exists to move ahead with personal data disaggregated and put under the control of individual citizens. Very broadly speaking, the same technology used today to prove that certain websites or email messages are authentic might be deployed to allow the government to digitally sign electronic, machine-readable documents before sending them out to individuals. If someone goes on to share this document with a third party then the government's digital signature would prove its authenticity. One interviewee told us:

> *"This is a way for government to deliver personalised, joined-up public services that are less rigid [than other proposed models]."*

An open standards approach to issuing secure electronic proofs would enable a range of solutions for individuals looking to store their personal data (either on a local device, on several devices or in the cloud) and make it easy for any third party to accept electronic proofs in place of or alongside their analogue counterparts. Pushing control of these sorts of proofs back out to citizens should help to deal with one of the main challenges for government in the digital age – the tension between joining up data and protecting privacy. One interviewee summed the dissonance up clearly:

> *"People want a joined up government, but then are wary of data sharing when they think it could be an invasion of privacy."*

Allowing citizens to act as the point of integration might also help eliminate the sorts of errors we sometimes see when departments or private sector providers base their activities (and invoicing) on data that is out-of-date.

And as with government transactions, eliminating the offline leg for transactions between individuals and private entities would save everyone involved time and money. All sorts of interactions, from starting a new job to opening a bank account or moving home, would finally catch up with the rest of our digital lives.

104 US Department of Veterans Affairs, "Blue Button Reaches One Million Registered Patients", August 2012

105 HHS.gov, "Introducing Blue Button+"

There's an app for that

An open standards approach to electronic purchasing and electronic proofs is closely related to the idea of opening up read and write APIs as standard for government services. An API provides a specification for two or more pieces of software to interact with each other. This is the mechanism that developers use when they build apps that connect to existing internet platforms like Twitter or Facebook. Providing the APIs and software development kits (SDKs), and publishing the necessary documentation, benefits all sides. Developers are able to innovate around an established platform, users have access to new apps and services that meet their needs, and the platform itself benefits from increased engagement. One of the greatest success stories – and one that will be familiar to many readers – is the explosive growth of the Apple App Store.

Box 9: What's in store?

In less than five years, Apple's App Store has attracted over 200,000 iOS developers, 850,000 apps and more than 50 billion unique downloads.[106] Participation in the Apple Developer Program starts at $99 (£65) a year, for which developers can download software to help create their apps, engage with their peers on forums, and access guides throughout the building, testing and final release of an app. Apple's model means hugely reduced barriers for anyone who wants to develop and distribute apps for Apple devices.

Apple is not alone in this space. Google, Microsoft, Amazon, BlackBerry and others are all pursuing variations on the app store model.

In principle, as government services are transitioned to their new open standards digital incarnations, there is no reason why government cannot expose more APIs for developers to work with. In practice, serious attention would need to be paid to hardening them against malicious activity, and government will need to build up its capabilities in this area. This is a problem that heavy-duty commercial APIs also have to contend with, and should not be a deal breaker. But it is important to remember that government web services are a particularly high profile target, and that citizens may be less tolerant of downtime on government services compared to similar commercial services. Moreover, as the rules of engagement for these sorts of encounters are still evolving, the transparency attached to government may make it harder to deploy the same breadth and intensity of countermeasures that other organisations might deem necessary.

Once these security concerns have been addressed, developers with access to read and write APIs for government services would have a huge opportunity to innovate in the space between government and citizens. This should help to break some of the logjam in government by letting others in. As one interviewee told us:

> *"There is a very monolithic mindset and a huge amount of bureaucracy. Just to get mobile out in the field…we can't even get a pilot going."*

The simplest applications might start out by providing a better interface for an existing service – say tailored for a particular community or device. But more

106 Apple, "Apple's App Store Marks Historic 50 Billionth Download", May 2013

importantly, developers would be free to build apps that more comprehensively met user needs by blending government services with other related activities. Users of a third-party app or website might even use a government service but start and end their journey elsewhere. Imagine, for example, a service that securely integrated your online banking with your tax return, or one that let you notify all of the organisations in your life – public and private – when you changed your name or address.

Box 10: Tracking civic issues

Many areas in the United States operate a 311 telephone number for access to non-emergency municipal services. In March 2010 the then Federal CIO, Vivek Kundra, announced the creation of a uniform Open 311 API for these services.[107]

At its heart Open 311 is about creating a specification to turn 311 services into an open platform based on open standards. Rather than power a single app or incarnation of 311 services on the web, the idea is to enable innovation and diversity that will meet user needs. Open 311 describes it thus: just as you can choose among many different Twitter applications or web browsers, you should be able to choose – or create – the best application to interact with your city.

SeeClickFix is one of the most prominent US services that supports the Open 311 protocol. In the UK, FixMyStreet also supports Open 311 and is using this to help integrate their service with councils' back-end systems.

Box 11: Small business record keeping

In 2012 HMRC invited a number of developers to deliver apps that would make it easy for SMEs to keep track of their financial records. The initiative is consistent with HMRC's plan to help small businesses below the VAT threshold to keep up to date records and reduce the number penalised for non-compliance. Eight apps are now listed on the HMRC website. Most are free to download and offer the capability to keep track of payments and expenses, and estimate tax liabilities for the year.[108]

The decision to allow third-parties to build these apps has promoted competition and innovation and leveraged private sector activity to deliver something that would otherwise have required more substantial in-house resource.[109]

One of the main concerns about this sort of approach is how it would cater for services where the authority and accuracy of information provided to citizens is very important. One way to handle this would be for government to specify some minimum standards for developers, and to revoke API access for apps in breach of the rules. A more aggressive approach would be to vet and approve apps before granting full API access. Whilst we do not see a case for a fully-fledged government app store - particularly when existing marketplaces are already established - government does need a great way to help users discover relevant apps and services. Clear, interactive and up-to-date listings on the relevant parts of GOV.UK, with outbound links to third-party websites or app store listings, would be a good place to start.

A second concern raised by some is the acceptability of developers monetising access to government services, either by charging for apps built on government

107 Open 311

108 HM Revenue & Customs, "Simple record keeping applications for mobile devices"

109 HM Revenue & Customs, "Collaborative Assembly of Software Developers And HMRC (CASH) Meeting", November 2011

APIs or folding advertising or sponsorship into the apps themselves. This sort of problem is not really a new or particularly digital one – there are already plenty of dubious organisations and individuals who try to convince unsuspecting people to part with money for government services that are actually free at the point of access. Moreover, the government's commitment to building straightforward, mobile-first digital services based on open standards should ensure it is very easy for anyone to access an excellent digital service by going directly to the main government website. With this baseline in place, apps and services that provide no substantial functional benefits will have a hard time making money. Conversely, where people do pay for apps, it will be because they are successful in meeting a previously underserved user need.

Recommendations

3. **Make electronic purchasing based on open standards the default for government departments**. Government is a major purchaser but is not as nimble as it should be. A widely adopted electronic platform for government buying would lower prices and reduce bureaucracy. This would also provide the critical mass for widespread adoption of electronic invoicing, saving businesses billions of pounds a year.
4. **Require government to issue and accept secure electronic proofs for addressing, tax and the like**. This is a necessary condition for fully digitising government services. It would also make it much easier to share these proofs with third parties in a way that goes with the grain of our increasingly digital lives. An open standards approach should enable individuals securely to store these proofs alongside other information in a personal data store of their choosing.
5. **Expose Application Programming Interfaces (APIs) for all government services**. The internet provides an opportunity to separate the different layers of public service delivery. Exposing read and write APIs would allow anyone to write apps capable of communicating with government systems, opening up a new wave of innovation as developers compete to meet user needs.

6
Total Data

Our world is awash with data. As digital networks reach ever further into our economy, and as the cost of storage continues to plummet, organisations of all sorts are accumulating more data than ever before (and in quantities far in excess of what most people can easily visualise). This trend will only intensify in the future, as the data "exhaust" that we leave in the wake of our online activities grows and the internet of things connects many billions more devices to the network.

Like any modern organisation, the government already works with data. And although there are many critics of the pace of progress on releasing government data via the web, in international circles the UK is often regarded as a leader in opening up government data in pursuit of transparency and accountability.

Opening up even more government data is a necessary condition for transforming government, but will not be sufficient for the years ahead. We argue here that government needs to make a concerted effort to force data-driven thinking and problem solving, and a more rigorous application of the scientific method, into its everyday activities. We need to move from *open data* as a fringe activity to *total data* as the guiding philosophy for a digital government.

The appliance of science

In his review of the quality of care and treatment prompted by high mortality rates at Mid Staffordshire NHS Foundation Trust, Sir Bruce Keogh found that few of the hospitals he reviewed had a good understanding of the reasons for their high mortality figures.[110] He highlighted three specific problems: the complexity of the data, a shortage of data analysis and interpretation skills, and inconsistent metrics for monitoring. His description of attitudes to data is troubling:

> *"The review teams often witnessed information being used for justification: to confirm a particular viewpoint the trust had of a specific issue. Information was only rarely used in an enquiring manner [i.e.] in order to seek out and understand the root cause of a problem area."*[111]

The contrast with some modern business practices is stark. Data is in the DNA of today's most successful digital businesses. For many of the decisions that their

110 National Health Service, "Review into the quality of care and treatment provided by 14 hospital trusts in England", July 2013

111 Ibid

executives need to make, the explosion of data in recent years has provided a direct means to figure out what works.

Box 12: Reimagining retail

The online retailer Amazon has profited hugely from a big data advantage. By leveraging the data its platform generates about products and customers it can offer personalised item recommendations based on past purchases, browsing history and the behaviour of other users; optimise the layout of pages and categories by simultaneously testing many different variants and selecting those that perform the best; and use dynamic pricing to profitably ration popular items or clear inventory when there is a surplus of products in the market.[112] All of these tactics can be deployed far more precisely and rapidly than a traditional retailer can manage.

A recent study by Nesta examined a subset of businesses – 18% or so of those with active online operations – that are making sophisticated use of data.[113] They found that these firms experience a visible data dividend, and are almost twice as likely as their peers to report that investment in analytics has made a significant contribution to their business performance.

Rapid, detailed data-driven decision making is also making inroads in our personal lives. The recent boom in personal tracking and monitoring products harnesses digital data collection, mobile devices and analytics to help people relate behaviours to outcomes. Online services like Randomise Me, currently in beta, are already starting to make randomised control trials accessible to everyone, not just scientists.[114]

The lean start-up

For many people, the core principles for fast data-driven decision making in business were encapsulated well by Eric Ries in his work on a "lean start-up" methodology.[115] Based on his experiences working with several US high-tech start-ups, he advocated an approach to business development based on a combination of hypothesis-driven experimentation, iterative product releases and validated learning. Done well, this should help to shorten development cycles and contain costs. As Todd Park, United States Chief Technology Officer puts it:

> *"If something that takes 18 months and costs a ton of money results in failure, that's catastrophic. But if four days of effort by a three person team doesn't pan out, that's completely acceptable, right? The lean start-up model is the best risk-management methodology you could adopt; the cost of failing is exceedingly tiny."*[116]

Data is central to the lean start-up concept – for determining the minimum viable product, for making incremental improvements based on split testing (sometimes known as A/B testing), and for determining when it is right to pivot in order to make progress.

Most importantly, the methodology focuses on collecting "actionable metrics" that can be used to generate insights, as opposed to "vanity metrics" which may paint managers in a good light but add little to their ability to make better decisions.

112 Wired, "Amazon's Next Big Business Is Selling You", October 2012

113 Nesta, "Rise of the Datavores", November 2012

114 Randomise Me

115 Ries, "The Lean Startup", 2011

116 McKinsey & Company, "Government designed for new times", 2012

Box 13: Tax, snaps and mobile apps

Tax preparation in the US requires people to answer hundreds of questions across many forms, resulting in a lot of paperwork. In 2011 a new mobile app called SnapTax was launched, which for many people revolutionised and massively streamlined the process. Customers use the camera in their smartphone to take a picture of their W-2 forms (the end-of-year statement that that summarizes an employee's taxable income for the year) and answer a few related questions. The app then compiles most of the tax return, ready to file directly from the app or from a desktop computer.[117]

SnapTax was developed by a team of five, and was the result of a deliberate attempt at disruption. What makes the story unusual is that this team of five worked at Intuit, a company with around 8,000 employees and a range of established tax products. Nevertheless, the SnapTax team were given the freedom to work like a lean start-up. Their success required senior management to create the right conditions for innovation – freedom, permission to experiment, and a willingness to kill projects fast if they don't make sense whilst doubling down on the ones that do.

In some respects the lean start-up methodology is a specialised application of the scientific method – in particular its core reliance on testable hypotheses – geared to starting and growing a technology business. Many of the same themes have been echoed in important work led by the Institute for Government over recent years. Their reports on the failure of large technology projects in government, and on the importance of better policy making in Whitehall, remain essential reading.[118]

The bright spot is that in practice, the lean start-up approach is very much in line with the way the Government Digital Service has run its activities over the past few years. Many of the people we interviewed as part of our research pointed to rapid, iterative project development as an important success factor. Of course, the idea that policies of all sorts should be tested is not a new one. Government regularly uses consultations and pilots before full implementation of a new policy. Nevertheless, the total data approach we are advocating would be a profound shift. Speaking about government as a whole, one interviewee told us:

> *"We are still very far from data-driven decision making; we've been focused on releasing data and the implications in terms of privacy and security."*

In the years ahead government should be applying lean start-up principles as a matter of course. Iterative product releases should be the norm across wide areas of government activity, including policymaking, with actionable insights coming back to managers in real time. Digital will finally make it practical to use widespread split tests and randomised control trials to identify the best course of action. Managers will have the evidence they need to pivot early when a project is not working as originally hoped, rather than throwing good money after bad.

Box 14: Forty shades of blue

Marissa Mayer, former Googler and now CEO of Yahoo!, famously described the process Google used to select the colour for the hyperlinks shown on its results page. Rather than hire an artist she ordered the team to set up a classic split test, with 40 different shades of blue each being randomly shown to 2.5% of the visitors to the Google search page.

Google tracked the data and noted which colour was associated with the highest click-through rate. The shade of blue that generated the highest conversion rate was then chosen as the default for all visitors.[119]

117 Intuit, "SnapTax mobile app", January 2011

118 Institute for Government, "Fixing the flaws in government IT", July 2012

119 New York Times, "Putting a Bolder Face on Google", February 2009

We recognise that some areas of government activity will not be amenable to a very aggressive data-driven, iterative approach (much as some business advances have owed as much to visionary leaders and designers as they have to data-driven insights). We think there are two broad categories to be mindful of. First, complex systems that remain beyond the bounds of our ability to model accurately or completely. This is particularly likely to be the case for social problems – think run-down neighbourhoods or neglected children – where many different factors are in play, outcomes are difficult to measure, and time lags are unavoidably long. Second, policy decisions that boil down to values and matters of conscience as much as they do to evidence and analysis. For these sorts of problems, even with great advances in data mining and machine learning, we will continue to look to philosophers and politicians to be courageous and show leadership. One interviewee explained:

> *"There will always be decisions for government to make that are political, but the difference is that better use of data means we can have more informed political conversations."*

So we are not advocating a wholesale shift to technocratic government and policy by algorithm. But we do think that, after decades of talking about the importance of evidence-based policymaking, it is time to genuinely put this at the heart of how government is run. In the future, decisions that are not backed by insights derived from actionable metrics should be the exception, and subject to additional scrutiny as a consequence.

Box 15: Analytics in the Big Apple

Michael Flowers is the Analytics Director for New York City at Mayor Bloomberg's Office of Policy and Strategic Planning. He leads a team that analyses city data from various agencies to efficiently allocate its public safety resources. Their work in inspecting illegal conversions, which are dwellings that have been cut up – often unsafely – into smaller units, demonstrates the power of data-driven decision making.

New York City receives around 25,000 illegal conversion complaints a year, but it has only 200 inspectors to handle them. Flowers and his team approached the problem by starting with a list of the 900,000 properties in the city. They used datasets from 19 agencies, plus other information about the buildings and locations. This meant combining data about everything from foreclosure proceedings, anomalies in utilities usage and when the building was built, to ambulance visits, crime rates, and rodent complaints. They compared this information to fire data, and developed a system which used correlations to determine where inspectors should investigate first. Prior to adopting this approach, only 13% of cases investigated resulted in vacate orders. Using the more aggressively data-driven analysis, inspectors were redeployed to investigate cases that were more likely to present a severe risk. As a result they are much more likely to be right first time: now 70% of cases investigated warrant a vacate order.[120, 121]

This case dramatically shows how local resources can be better allocated through the use of data analytics, and provides an important example of the potential for cities to join the data revolution.

For today the technology finally exists to make this sort of approach practical for a wide range of government activities. All of the large digital businesses that we tend to compare government to – the banks, the retailers, the internet giants

120 New York Times, "The Mayor's Geek Squad", March 2013

121 Slate, "Big Data in the Big Apple", March 2013

– rely on data and real-time course corrections to an extent unimaginable by government in its present state. They do this both because it works, and because they have to in order to stay ahead. Government is not subject to the same sorts of competitive pressures, so the impetus to move on this agenda is bound to be lower. Getting government ready to implement a total data approach will therefore require significant changes on both capability and on culture.

Painting by numbers

For a total data approach to define the way government works, every person working in government will need a baseline level of competency in critical thinking, quantitative methods and digital literacy. Not everyone needs to be an elite computer scientist or data visualisation expert. But, as highlighted in previous Policy Exchange research, government will need more data scientists – people skilled in working with data, passionate about seeking out insights, and with the skills to turn these insights into compelling stories that resonate with decision makers.[122] Recent research published by eSkills UK suggests that, whilst employment of ICT staff is expected to rise by 2.5% a year, demand for big data staff is expected to rise by between 13% and 23% a year.[123] We have been pleased to see a number of government departments actively recruiting data scientists over the recent months.

More broadly, government will need many more data-savvy staff with a good awareness of how to work with data. In a recent survey of public sector staff, 72% of respondents agreed that it is becoming increasingly important for civil servants to know how to access, share and use data. In the same sample, the majority of people said they did not know how to access or interpret data sets, and could not cite specific data initiatives or their benefits.[124] Overall then this is not the sort of systemic capability that can be added simply by recruiting new people – rather we are talking about adding a level of comfort working with data to the array of skills that existing civil servants already have.

Box 16: Vital statistics

The Royal Statistical Society is running an ongoing campaign to improve the way people use numbers in daily life, in business and in policy. Their research shows that only 7% of people have confidence in politicians using official statistics accurately when talking about their policies.[125]

Although most people say they are confident with numbers and with using data in their job, when challenged with some simple problems many people fail to answer correctly. Although 92% of people correctly say that 50 is 25% of 200, only a quarter of the public know that the likelihood of getting two heads in two tosses of a coin is 25%, showing a limited understanding of probability.[126]

Professor Hans Rosling, presenter of *The Joy Of Stats*, sums up the importance of addressing the capability challenge on data and numeracy as follows:

> *"The world has changed so much, what people need isn't more data but a new mindset… Countries and corporations alike need to adopt that same data-driven understanding of the world if they are to make sense of the changes we are experiencing in this new century and the opportunities and challenges that lie ahead."*[127]

122 Policy Exchange, "The Big Data Opportunity", July 2012

123 e-skills UK, "Big Data Analytics: An assessment of demand for labour and skills, 2012-2017", January 2013

124 Guardian, "Public sector staff know open data matters but fail to get government plan", February 2013

125 Ipsos MORI, "Public Understanding of Statistics: Topline Results", April 2013

126 Ibid.

127 Royal Statistical Society, "About Getstats"

The most straightforward approach to integrating enhanced data capability would be to incorporate these sorts of skills into the next iteration of the Civil Service competency framework. In practice government will need to invest in stretching, high-quality training and development to deliver on this agenda. This should certainly involve leveraging many of the self-directed learning resources already available online, such as the School of Data site run by the Open Knowledge Foundation.[128] It might also encompass learning and development partnerships with private or third sector organisations that specialise in topics like statistical literacy or teaching people to code, and/or are already very practiced at imparting these skills to their own workforces. And as the sorts of skills required to work with data are in short supply in the modern economy, any efforts that the government makes to improve the situation are likely to have some wider spill-over benefits for the economy.

Testable by default

The other big challenge standing in the way of a total data approach to government is the culture around data and evidence that has built up in Whitehall over the years. When the Institute for Government compared the theory and reality of policymaking over the period since 1997 they concluded that:

> *"Most policy makers agree that evaluations are important, and Whitehall commissions them in significant numbers. But most politicians and civil servants are extremely sceptical about whether Whitehall learns from evaluations effectively: lessons often do not feed back into policy design or problem formulation. In other words, evaluations are often commissioned but often ignored."*[129]

We are optimistic that, with the right investments in capability building, many of the gains from adopting an agile, data-driven approach to government business will be self-evident and sooner or later will largely sell themselves. This will be particularly true as the pressure to do better for less continues to bear down on government departments, and the first round benefits from digitising old analogue processes are exhausted. The newly created What Works centres are a good example of the government recognising the importance of evidence in policymaking.[130]

We are concerned, however, that the temptation to deviate from a data-driven approach will persist – and that without robust governance around this, it will be difficult to effect rapid change across the whole of government. One interviewee explained:

> *"Even when we've had a small success in this space, or see a project working in another department, we struggle with scaling or implementing it elsewhere."*

Insisting that every policy or activity be oriented around a testable hypothesis and set up to deliver actionable metrics would be both noble and hopelessly naive. Reality will always get in the way. So whilst we think future government activities should be testable by default, we also need to formalise what happens outside this space. To be clear, ministers quite rightly have the prerogative to direct staff in their departments in the manner they see fit. But in cases where it is not clear how the data or evidence will be collected to enable rapid evaluation of a particular course of action, a clearance mechanism should be used to ensure that everyone involved understands that this is the case. This might work in much the same way that departmental accounting

128 Open Knowledge Foundation, "School of Data"

129 Institute for Government, "Policy Making in the Real World", April 2011

130 Cabinet Office, "What Works Network", June 2013

officers are already required to seek a Ministerial direction before implementing a policy that they do not believe represents a good value for money use of public funds.

The ultimate aim of a total data approach to government is faster, smarter decisions resulting in better outcomes for citizens and the economy. Today there are too many instances of policies implemented without enough thought given up front to how the data will be collected to conduct an effective evaluation. And even where good evaluations are done, they often take so long that their conclusions arrive too late to make a material difference. If government manages to get a grip on a data-driven approach to its activities then we will know what works, fast. And once government operates like this as a matter of course, we will free up more time to debate the genuinely complex policy dilemmas where the expertise of long-serving officials, Parliamentary committees and subject matter experts can add the most value.

Recommendations

6. **Extend lean start-up methods as a preferred way of working in government.** An approach based on validated learning, scientific experimentation and iterative product releases can result in better outcomes, delivered more quickly, with less risk. This will require feedback to flow all the way through the system, so in this world of continuous improvement any artificial distinctions between policy and delivery will need to end.
7. **Incorporate digital and data skills, and basic scientific literacy, into the core Civil Service competency framework.** This will need to be backed up with investment in stretching, high-quality training and development. Data is in the DNA of successful modern businesses. These skills are crucial for the digital economy and government has a responsibility to invest in those that work for it.
8. **Put a double lock on policies that are not testable by default.** Scrutiny of government policy too often takes place after the event and with insufficient evidence to discriminate between competing assertions. In future, any policy that does not specify ex ante how its success can be tested should require authorisation from both the Minister responsible and the departmental accounting officer.

In the beginning there was data

In the digital and interconnected world that provides the context for this report, the implications of a total data approach extend beyond the edge of government. Digital data is often described as the raw material for the 21st century, and by virtue of its size and status the government is often the custodian of some of the most valuable data in existence. In the words of one interviewee:

> *"There are big areas we can use data to solve complex problems that require joined up public services. For people with complex needs, such as housing and health, we need a cross-cutting approach."*

Previous research published by Policy Exchange has highlighted the case for opening up government data and for making better use of advanced analytics across the public sector.[131, 132] Since these reports were published the government has made some progress on the data agenda. An independent review of public sector information led by Stephan Shakespeare reminded us that:

131 Policy Exchange, "A Right to Data", March 2012

132 Policy Exchange, "The Big Data Opportunity", July 2012

"The next phase of economic, scientific and social development has data as its core… This data, to optimise its value to society, must be open, shareable and, where practical, it should be free. The richest source of data is government."[133]

The government has broadly accepted the review's recommendations, and so our discussion seeks primarily to build on this foundation. We see two critical areas where the total data approach we are advocating will require government to go further in the years ahead: on open data and on analytics.

A right to data

First, government needs to finish what it has started on opening up government data. Although more data than ever before is now released in response to Freedom of Information requests or published on data.gov.uk, the picture remains incomplete. This is unacceptable; data generated by the public sector as by-product of serving the public must surely belong to the public. In previous decades the cost of making government data available was often prohibitive. This argument is shaky now and will not stand up as technology continues to advance.

So as government completes its journey to extensive digitisation, it should routinely open up all non-personal public sector data for anyone to use, reuse and redistribute as they see fit. Strong protections will need to remain in place for personal data, for data that relates to national security, and to protect a space for frank discussions between officials and ministers. Everything else should be open. As one interviewee told us:

"The open data agenda began being about transparency and an accountability to the taxpayers, but we can also use the data to build new things and improve the way we make policy."

This is the only way to break the deadlock that otherwise threatens to stifle the benefits of open data for the economy. Rather than circle endlessly round a conversation where government asks what data people want, and people don't know what to ask for because the data isn't open, the answer is simply to publish all of it. This will almost certainly be embarrassing for some in government who have not paid as much attention to their data as they should have. But it is also the fastest and fairest way to get any errors found and fixed, and will maximise the scope for people to find innovative new applications for the UK's rich data assets.

With this much data coming online for integration into third-party analyses and apps it will be more important than ever for people to be able to find what they are looking for and rely on its availability. So for clarity, the world we envisage is not one where government simply dumps data onto data.gov.uk or publishes (virtual) mountains of documents on government websites. All government data needs to be available online in open standards formats with persistent Uniform Resource Identifiers (URIs) to facilitate the use and reuse of government data in other projects.

Research published by Deloitte to inform the Shakespeare review estimated the direct value of public sector information in the UK at £1.8 billion, with wider social and economic benefits taking this up to £6.8 billion.[134] These figures are in line with other research done in this field, and are widely recognised as conservative estimates of the potential economic value of open data.[135, 136]

133 Shakespeare, "An independent review of public sector information", May 2013

134 Ibid.

135 European Commission, "Digital Agenda: Turning government data into gold", December 2011

136 Cabinet Office, "Further detail on open data measures in the autumn statement", November 2011

Box 17: Prescribing analytics

In 2013 a joint team from Open Healthcare UK, Mastodon C, the Open Data Institute and Bad Science published their first analysis of publicly available NHS prescription data. This examination of the way doctors are prescribing statins found that over £200 million per year could be saved, with no impact on clinical efficacy, if doctors switched some patients from branded to generic drugs.[137]

Previous work published in the British Medical Journal examining the NHS drugs budget found that, in the top 10 prescribed drug classes by cost, over £3 billion a year is spent on branded drugs where in most cases equally effective low cost generic alternatives are available.[138]

Telescopes and microscopes

Beyond open data there remains huge potential for government to make better use of advanced analytics and high-performance computing to optimise its activities and interventions. In many cases, the application of "big data" technologies will go hand-in-hand with the iterative, lean start-up approach to government described earlier in this section. But in addition to using large datasets to refine and guide policy, product and service development, there is also scope to leverage historic data to identify previously overlooked or non-obvious opportunities for efficiency savings.

Whilst deploying big data technologies no longer requires very specialised hardware (many of the systems in use today rely on commodity hardware and are highly scalable) they do require access to large compute clusters, storage capabilities and technical expertise. Whereas companies like Google, Facebook, Apple and Amazon all have the need and means to design their own infrastructure, mainstream government departments are far less likely to have access to this sort of firepower in house. Government is understandably reluctant to invest significantly in big data technologies on the promise of uncertain future benefits. Whilst its sense of what is possible will improve as the data skills and capabilities described earlier accumulate, it would be wrong for this to hold back progress.

So in the years ahead, we think government should be prepared to buy in big data analytics on an explicit payment-by-results basis. Where an external organisation can demonstrate original insights that make a material difference to the efficiency or cost of ongoing government activities without compromising outcomes for citizens, government should be prepared to split any savings realised with an external partner.

The prescribing analytics example above suggests that much could already be done with open data. Where personal data is required to inform the analysis then strong protections around data sharing will be essential (and identifiable personal data should certainly not be made openly available). Government might want to develop a mechanism to steer activity – perhaps through a series of challenges or themes – or alternatively leverage external expertise by making an open call for proposals in whatever areas analysts think they will have the best chance of success.

As government gets a grip on data, and as the biggest previously overlooked opportunities are closed out, the scope for analytics businesses to make money from this sort of activity will decline. But in the meantime, if businesses,

137 PrescribingAnalytics.com, "NHS efficiency savings: the role of prescribing analytics"

138 British Medical Journal, "Getting better value from the NHS drugs budget", December 2010

entrepreneurs or academics can reveal new ways to save significant sums of money without denting service quality, and if they are prepared to invest to prove the strength of their convictions, then government should not be squeamish about partnering with them and handing over a share of the money saved.

Recommendations

9. **Open up all non-personal public sector data with persistent URIs**. Data generated by the public sector as a by-product of serving the public belongs to the public. Making this freely available and accessible as linked data with persistent identifiers will provide a reliable foundation both for accountability and for those looking to build businesses by adding value to public sector data.
10. **Buy in big data analytics on a payment-by-results basis.** Advanced analytics can identify both big opportunities and a long tail of smaller opportunities for smarter decision making that add up to significant savings. Government should run appropriately secured contests to find these savings, paying businesses, entrepreneurs and academics based on the results they deliver.

7
We Can be Heroes

As is so often the case with discussions about digital government, the core challenges relate to people more than they do to technology. None of the changes we have discussed require the government to adopt bleeding edge technologies, and there is certainly no call for government to invent things that are currently in the realm of science fiction. Fully digitising government, with data at the heart of decision making, is quite practical using established technologies.

The real challenges are around mindsets, culture, change management and attitudes to risk. These are the same challenges that have frustrated attempts at public sector reform before, and that those spearheading the latest round of Civil Service reform initiatives are also having to square up to. A recent McKinsey & Company global survey found that the most common factor behind the failure of corporate digital initiatives is a lack of interest and desire to change on the part of senior management.[139] As part of our research we asked people working in the public sector about technology leadership in their organisations. Only 58% of people said they agreed their organisation's IT department understood what tools and technology is needed to do the respondent's job well. This figure fell to 51% when talking about the confidence people had that their organisation's board understood their needs.

All of this is consistent with broader data on confidence in public leaders. In the 2012 Civil Service People Survey, only 39% of staff said they had confidence in the decisions made by senior management in their organisation, and only 29% said that change was managed well in their organisation.[140]

So if we are serious about delivering radical reform of government, underpinned and enabled by digital tools and technologies, then we have to start thinking differently about what we expect from our public servants and public leaders. Government has already started to replace Chief Information Officers with newly specified Chief Technology Officer and Chief Digital Officer roles, recognising that these require representation at board level (and with digital represented at the same or higher level of seniority as technology).[141]

In the years to come, this drive must go much further. The digital age will put a premium on collaboration, learning and innovation. Organisations that are able to leverage the talent and curiosity of their people and the power of open networks will find themselves at a distinct advantage – and this applies as much to government as it does to the private sector. One interviewee told us:

> *"A lot of digital is about showing people. Some hear digital and they switch off. We are looking at bringing in people from places like eBay and Amazon, and other departments that are doing things particularly well, to show people what transformation can look like"*

139 McKinsey & Company, "Bullish on digital" August 2013

140 Civil Service, "Civil Service People Survey 2012", November 2012

141 Cabinet Office, "Technology Leadership"

In this chapter we consider two critical success factors for digital government: setting the right conditions for a leadership cadre with the skills and ambition to deliver radial digital transformation, and investing in people across government to ensure that open policymaking and innovation have a real chance to thrive.

Lead, follow, or get out of the way

A once-in-a-generation push on digital government as described in the previous chapters will take exceptional leadership from people at the top of government. This is partly about strengthening the capability of the top of the IT profession in government – as one person we spoke to put it:

> *"There are some great people in government IT. But we need more of the best, and not just facilities managers with Gartner subscriptions."*

The way government commissions ICT products and services is already being overhauled, and progress on this agenda must continue to be made. Beyond driving out cost savings by ending large, expensive and inflexible contracts, government and its private sector partners must find a more sustainable way to work together that aligns incentives for all involved to focus ruthlessly on meeting changing user needs. This will require more leaders to have the courage to set goals by reference to the ultimate outcomes a department or organisation is interested in, and in some cases to make space for innovation by stopping short of being very prescriptive about potential solutions. It will also mean being open to working with a wider range of potential partners, including more small and medium-sized enterprises, both directly and through the partner networks of larger players. Steps to cut back bureaucracy and extend electronic platforms as described earlier in this report will have an important role to play here. Overall, given the pace of change in the digital world, simply maintaining the status quo (sometimes in the misguided belief that this is the path of lowest risk) can no longer be acceptable.

But the leadership challenge goes far beyond the IT profession. Successful transformation of government will take a real effort from everyone at senior levels in government, regardless of whether or not they currently see technology as part of their role or responsibilities. The good news is that government probably has much of the raw materials it needs. Central government has always been somewhere that attracts talented people, and this is just as true today as it has been in previous decades. The challenge ahead is to prime this leadership group – few of whom could be described as true "digital natives" – for driving radical digitisation across everything that government does. Another interviewee explained:

> *"A truly transformational digital government is a big leadership issue, but it is still a very abstract concept."*

Leadership and change management is a serious challenge for government. This will take a lot of people out of their comfort zones, and some will not stay the course – but for those that do, this investment in their human capital will

significantly enhance both their own personal prospects for the decades to come, and the ability of government to redefine itself for the digital age.

Interchange

First, in the years ahead we should expect more senior staff in government to have recent experience working in leading roles outside of government. In recent years 23% of new entrants to the Senior Civil Service have been external.[142] The Civil Service reform plan included an action to make it easier for staff at all levels to move between government and the private sector (and introduced the expectation that permanent secretaries in the main delivery departments will have had at least two years' experience in a commercial or operational role), and more actively to train high-potential individuals alongside their peers in the private sector. It also understood that the best way to head off concerns that the ablest civil servants will not return is to ensure that they will have an interesting and demanding job to return to.

The importance of gaining first-hand experience working in a range of different high-paced environments will only increase as we head toward a fully digital government. As the power of technology continues to advance and its cost continues to fall, any organisation will be able to purchase the hardware, software and services it needs as a foundation for its digital activities. But making sure this technology is used to the best effect will be hard, particularly for large organisations with a long history of doing things a certain way. As one interviewee put it:

> *"Technology is the easy challenge, but it is used as an excuse by bad leadership."*

Moreover, this sort of change management challenge is (self-evidently) not something that is easily cracked by simply studying best practice in the abstract. Instead, people who have been involved first-hand in businesses or third-sector organisations that use technology well have valuable expertise and knowledge to impart. At present, when it comes to digital too many people don't know what they don't know:

> *"People in my department think I [the digital leader] am just the person who updates the website… there's not enough pressure or visibility to drive this agenda throughout the public sector."*

Digitally powered notions of learning-by-doing, fast following and cross-fertilisation of ideas are some of the key factors underpinning the success of many leading technology businesses and clusters. Previous Policy Exchange research on the environment for high-tech start-ups in the UK pointed to the way talent is relatively free to move around in Silicon Valley as something that the UK should do more to emulate to support innovative organisations in the private sector.[143] In their book *Start-up Nation*, Dan Senor and Saul Singer discuss the success of Israel's high-tech sector, and ascribe much of this to the culture imprinted by mandatory participation in the Israel Defence Forces (IDF). They argue that service provides people with the opportunity to develop a wide range of skills and contacts, to exert responsibility in a relatively hierarchical environment, and to take the initiative to make things better.[144] The accumulation of these skills and experiences provides a particularly strong foundation for people to go on to become entrepreneurs and innovators.

142 HM Government, "The Context for Civil Service Reform", June 2012

143 Policy Exchange, "Bits and Billions: A blueprint for high-impact digital entrepreneurship in the UK", September 2012

144 Senor and Singer, "Start-up Nation", 2011

Box 18: Meet me at Silicon Roundabout

The Tech City Investment Organisation (TCIO) was set up by UK Trade and Investment as a body to promote East London's technology cluster. In its first year it achieved its goals in terms of new investment and awareness of Tech City, and is striving to do much more in 2013.[145]

To this end, the government hired Joanna Shields, formerly EMEA Managing Director at Facebook, to take charge of its operations. Bringing with her a huge amount of industry experience and knowledge, Shields's appointment promises to aid TCIO in driving foreign direct investment in Tech City companies at a greater pace, as well as raising the cluster's profile internationally.[146]

Stepping up interchange with the private sector will help people in government understand better how innovative organisations are using technology, and what it will take to make digital a success back in government organisations (both in terms of successes to emulate and adapt, and pitfalls to avoid). So in the years ahead government should significantly strengthen its interchange and secondment functions, with the expectation that most senior staff will have recent, substantive external experience in exceptional private and third-sector organisations as a foundation for insourcing digital talent. We do not think there will be a shortage of targets for senior secondments out of the civil service – for the host organisation there are real benefits to be gained from a better understanding of how government works, as well as the corporate social responsibility benefits of participating as part of a broader contribution to public life.

Be the best

Although significantly enhanced interchange and insourcing will make a real contribution to stronger capability at senior levels, it will not be right for everyone and on its own will not be sufficient to hone the leadership required to transform government. As we head into the second half of this decade, to maximise their effectiveness everyone in a leadership position in government must have a deep understanding of how digital is changing the world we live in, and what this will mean for the future of public policy and public service delivery. Shrugging off ignorance of technology must no longer be acceptable:

> *"We need high level people in government on board. Some still talk about how they aren't digitally literate or tech savvy like it is a badge of honour."*

We do not expect everyone in government to have an intricate technical understanding of how to crack a hashed password or precisely why the MapReduce function is so efficient for processing large data sets. But when citizens are living their day-to-day lives in a world of ubiquitous internet access, data and digital devices, we do think it is reasonable to expect our public leaders to have a sound grasp of the basics of strategy for a world dominated by technology, data and the internet. When asked about the challenges facing policymakers in this space, one interviewee explained:

145 Tech City Investment Organisation, "Impact Report", May 2012

146 HM Government, "Joanna Shields to lead Tech City Investment Organisation", October 2012

"There is a lack of pace and slow development of skills sets, and there is still resistance. There is a clear lack of knowledge and even policy proposals that simply do not make sense."

Aspects of a more digitally capable world are starting to take shape. The Government Digital Service has published guidance for departments on recruiting digital talent and on tackling the organisational design challenges for delivering change through technology.[147] The core principles – including that technology must be strongly represented at board level, and that technology leadership must drive transformation rather than maintain a steady state – are sound and provide a good foundation for further change.

In parallel, and following the one-year progress review of the Civil Service Reform Plan, the Cabinet Office has announced a shift to five-year fixed tenure appointments for Permanent Secretaries, with immediate effect for all new appointments. This is intended to force Ministers to be clear about their core objectives and expectations of their department. The government is also strengthening Parliamentary accountability for Permanent Secretaries and 200 or so Senior Responsible Officers (SROs) for major projects.[148] In their review of overseas lessons for the Senior Civil Service, the IPPR linked this to the importance of SROs not moving post mid-way through a project.[149]

As we look out beyond 2015, the shift toward a more data-driven, scientific approach to the business of government opens up the potential to expand on the principle of fixed tenure appointments for Permanent Secretaries. Starting with the next most senior positions and working down through the senior civil service, fixed tenure appointments could more routinely be used to sharpen performance management, force clarity on objectives and drive transformation. The essential precondition is the availability of high quality, timely data returned from policies and programmes that fit the notion of "testable by default" introduced earlier. People must be confident that they will be judged by objective data on the clearly defined outcomes that they are responsible for, and they must see their peers held to the same standard.

People will also need to adjust their expectations about moving from role to role, and be prepared to stay in a role for the duration of the appointment. Where someone performs well there should be an option to renew the appointment – but this should not be assumed. In an environment of continuous digital transformation, the role may not need to continue, or another senior civil servant may be better placed to take over. In these circumstances the outgoing individual will need to move to as new role via the internal civil service job market. Where someone repeatedly underperforms there should be a compassionate but firm mechanism to return them to a lower grade or help them find an alternative role outside of government.

For completeness, annual performance reviews should continue, and there will always need to be provisions to remove someone from post in extreme cases. But extracting someone from a fixed tenure appointment for the convenience of the department rather than because that individual is failing against their job objectives should be significantly harder.

By setting the expectation that more senior posts will be for fixed terms and rigorously evaluated against stretching criteria for continuous improvement, government will sharpen the incentive for leaders to consolidate and continuously

147 Cabinet Office, "Recruitment Hub"

148 Cabinet Office, "Civil Service Reform Plan: One Year On Report", July 2013

149 Institute for Public Policy Research, "Accountability and Responsiveness in the SCS: Lessons from Overseas", June 2013

improve their strategic understanding of the importance of transformation (and, inter alia, the pivotal role that digital and technology play as the only realistic way to achieve it). This puts the onus on government to deliver on its plans to enhance civil service capabilities, to strengthen the training offer for staff, and to embrace the recommendations made earlier in this report on digital, numeracy and analytical skills. Today, as one interviewee put it:

> *"Even if technology is a part of their life, when people in government are planning projects they don't think about their digital options."*

As with the Permanent Secretaries, the transition to this regime would need to start with new appointments. Over time government would need to seek a way to extend this to staff already in post. Although our sense is that the vast majority of senior officials would welcome a move toward more clarity on objectives and transparent data on outcomes, we are concerned that the minority who are most in need of support to prepare for the digital age would also find this the most daunting prospect. This is an important concern because many of the people who have worked in government for a long time have deep expertise in policymaking and delivery, and an extensive understanding of the history of the relationships, initiatives and pitfalls that litter the policy world. This experience is tremendously valuable, and real efforts must be made not to lose it in the transition.

Recommendations

11. **Further increase interchange so that most senior staff have recent external experience**. The private sector is by no means perfect, but government has much to learn from the way businesses are responding to rapid advances in technology, and it is important to see this first hand. Cross-fertilisation of ideas is one of the key reasons why Silicon Valley is such a powerhouse of innovation.
12. **Introduce more fixed tenure appointments for senior civil servants, starting with new appointments**. To maintain momentum on transformation, government must ensure that senior people know what they need to achieve by when, have a strong incentive to master digital tools and approaches, and are clear on how success will be judged. There should be renewed expectations that people will stay in post for the duration of an appointment, but no expectation of entitlement to stay in the same post indefinitely.

Innovate to survive

To make the most of the opportunities presented by the digital age, government needs to become a place where open policymaking is the default, and where there is real scope for high-impact collaboration and grassroots innovation. The reality of life in the public sector means that it is very difficult to envisage a significant movement on pay as a lever to attract more of the best people into government departments. But this is not necessarily a barrier to making government one of the most attractive places for talented people to work. A McKinsey & Company study of motivations for executives found that people rated non-financial incentives like attention from leaders and opportunities to lead projects as more effective motivators than performance-related pay and stock options.[150]

150 McKinsey Quarterly, "Motivating people: Getting beyond money", November 2009

By learning from the way that communities and collaboration are changing in a highly networked world, and by imitating some of the unconventional approaches that make some modern businesses such an attractive place to work, government can embed the culture of innovation that will be key to its survival.

Who's who?

One of the biggest issues raised with us by people outside government was the difficulty they often experienced trying to make connections with those leading policymaking or delivery inside government. This is partly a question of discovery: despite the publication of more data on departmental structures it can still be hard to know whether organograms are up to date and to find contact details for the best person to reach out to. It is also a question of churn. Overall turnover in the Civil Service is lower than in the private sector. But in the core policymaking functions in Whitehall things can be very different. At HM Treasury, for example, more than half the people working there in 2011 joined in 2008 or later.[151] The Civil Service Fast Stream styles rapid rotation as a selling point – it is designed to help people "amass a wide range of experience in a very short time".[152] Many (though by no means all) high fliers replicate this approach at more senior grades. The proposals outlined above are intended to stem some of the churn, but this is only part of the answer.

> *"When I'm trying to contact a civil servant, it is normally about a detailed policy or data query. You can look at the organogram, but even if it is up to date, there is rarely an email address."*

At present the primary communications channels for officials follow the analogue world of departments – separate email domains and phone networks correspond to physically separate buildings and mailrooms. This is changing – GOV.UK is rationalising hundreds of different websites onto a single authoritative platform, and increasing use of shared services and bulk purchasing should iron out other inconsistencies in things like access to instant messaging services.

The next step for making government more open and providing a foundation for collaboration should be to radically increase the transparency of who is doing what – and crucially, what they have done before. Senior civil servants are already named in some departmental data releases, and biographical information is available for a growing number of senior figures on GOV.UK (and, separately, compiled for subscription access by organisations like Dods). In the meantime, however, platforms like LinkedIn have radically changed the way many people think about networking as part of their business lives. People are increasingly comfortable being publicly associated with their employer, stating their responsibilities, and sharing their career history.

In this spirit, and to aid collaboration, government should introduce an open, online directory of officials, including current responsibilities and previous roles. This need not be a major undertaking for human resources departments – the experience of established social networks suggests that individuals can be left to take responsibility for their own profiles and for establishing connections

151 HM Government, "Review of HM Treasury's management response to the financial crisis", March 2012

152 Civil Service, "Fast Stream"

with current and past colleagues (in the process building the social graph for government). This would be both an order of magnitude richer than existing services like the internal directory of government email addresses and phone extensions, and open to the public. Registration should be mandatory for everyone down to new Fast Stream entrants, and strongly encouraged for everyone else (with exceptions for people working in highly restricted areas or where personal safety is a real concern).

Establishing a minimal profile should take no more than a few minutes. In the spirit of openness and authenticity, there could be an option for people to link this page to their existing social media profiles (e.g. dynamically populating their page from their LinkedIn profile or providing an easy way to find them on Twitter). As one interviewee put it:

> *"Technology is blurring the lines between politicians, civil servants and the public. Digital engagement, tweeting and blogging shouldn't just be a task for the communications team."*

Familiarity might be reinforced by running this sort of directory as part of a broader platform for communication across government as an alternative to email, as discussed earlier in this report. Indeed, for many people both inside and outside government, existing social media platforms including Facebook, Twitter and LinkedIn are increasingly displacing email as a platform for communication.

A persistent, personalised URL for the profile page for each official, along with a unified email address format for everyone working in government, would be a simple step to massively reduce the practical barriers to open policymaking and community engagement. We strongly suspect it would also help officials inside government to find each other and avoid reinventing the wheel by making it easier to identify and connect with their predecessors in a given role.

Free your mind

In a world where people in government are told that their employer values diversity and that they are expected to take responsibility for sometimes very unstructured situations, there will often be a high premium on freedom and autonomy. Maslow famously placed self-actualisation – the scope to exercise morality and creativity, to be spontaneous, to solve problems and to accept facts without prejudice – at the top of his hierarchy of human needs.[153]

This is particularly important for knowledge workers, and many people in government are firmly in this category. For the best people to excel, organisations are learning that they can combine stretching performance targets with a large degree of freedom for people to organise themselves in the best way to meet them. Recognising that people in the thick of the business also often have the best ideas about how to make practical improvements to the way things work, businesses are also explicitly granting employees advance permission to innovate. In a recent review of future leadership challenges, Deloitte argue that the idea that innovation comes from a lone genius is a myth. Their review suggests that organisations are successful when they have an explicit strategy for innovation – relying only on words of encouragement from the top is not enough – and

153 Maslow, "A Theory of Human Motivation", 1943

recognise that innovation can occur in any part of an organisation and at any level of experience.[154] In the research that we conducted with people working in the public sector, 82% said they understood what their peers needed to do their jobs well, but only 51% said their organisation's leadership understood their needs.

Box 19: Time to tinker

Google is famous for introducing one of the first "20 percent time" policies for its workers. The concept, now also adopted by technology giants such as Apple and LinkedIn, allows employees to concentrate up to one day per week pursuing projects outside of their work remit. At Google, it famously led to the creation of Gmail, when workers endeavoured to find a solution to problems users faced with email systems.[155] Though most projects have not been as large in scale as Gmail, many innovations have contributed noticeable value to both Google and its users. For example, one engineering director created the source code allowing a Google Chrome desktop to share links with Android devices, while another engineer developed code to allow simpler keyboard navigation within Google Reader.[156, 157]

Although there have been developments at Google which have seen 20 percent time become more restricted (the closing of Google Labs for instance), innovation remains essential for any business wanting to thrive in the digital age.

Most people working in government want to do a great job and to make a difference. Opening up more opportunities for people to innovate – and for this to lead to real change, not just fritter away time on token projects and memos destined for the bookshelf – will make a real difference to people's sense of job satisfaction and potentially unlock small but radical changes in the way things get done. As one interviewee explained:

> *"A lot of people working in our department are keen, our issue is making sure we have a strategy to encourage this in a coherent way. We have the skills, but it is about finding a way to let people get on and do new things."*

Given the importance of grassroots innovation in the new digital age, we think it is time for departments to more actively support and encourage it. Simply requiring all staff in government departments to spend some of their time on innovation is neither realistic nor practical – government has serious responsibilities and is not populated by a majority of elite engineers and computer scientists. But granting permission for some of the best and brightest to pursue ideas that they think will make a difference is worth considering.

As a starting point, departments might grant an option to the top 10% of performers in each grade to spend 10% of their time – i.e. half a day a week – on innovation projects that they think will make a real, practical difference to the way the department meets its users' needs. For this sort of initiative to work properly, people will need to be empowered to partner with others across government, and to test their ideas and put early product releases into play without huge

154 Deloitte, "Innovating for a digital future", May 2011

155 Google Press, "Google Gets the Message, Launches Gmail", April 2004

156 Google Blogs, "20 percent time spent coding in the clouds", March 2011

157 Google Blogs, "Google's '20 percent time' in action", May 2006

bureaucratic overheads (per the lean start-up philosophy described earlier in this report). They should also be expected to share what they are up to with the wider department and across government, and to be transparent about progress and the success or otherwise of their initiatives.

The digitisation and efficiency initiatives described earlier this report will be critical to making the headroom available for people to pursue these sorts of activities without impacting on their core work responsibilities.

Box 20: Innovation and engagement

As part of its drive for both quality and value for money, the Department for International Development (DfID) has established a formal mechanism to make the most of the knowledge and expertise of its staff. Professional advisers are expected to allocate up to 10% of their time to specialist professional work outside of their specific post, and their line managers are expected to support this and report on it in annual appraisals.

This helps the department draw on internal expertise rather than relying on expensive external consultants, and ensures that lessons learned are captured inside the organisation. It also helps staff to maintain and broaden their knowledge and experience. Whilst the mechanism has been formalised, it is also light touch: there are no transfer payments between business units, and no rigid definition of what activities are in or out of scope. The overall response has been positive, and is in line with the department's high employee engagement scores in the 2012 Civil Service People Survey.[158]

Start-ups and spin-outs

Digital technologies and networks, and the shift toward open policymaking, will blur the boundaries between different parts of government, and between government and the private and third sectors. Activities that were once the sole preserve of government will suddenly become ones where it is practical for start-ups and non-profits to develop products and services. Businesses will increasingly be in demand to bring their data and analytics expertise to bear on problems inside government. And some of the areas where government is a leader in innovation and new ways of working will be ready to be taken out into the wider economy.

In a world of routine collaboration it will make sense for government to explore new ways to work and organise in order to achieve the best outcomes. In order to attract some of the most talented digital innovators and entrepreneurs, for example, it might be more productive to spin a niche team out of government than try to assimilate very counter-cultural elements into established government departments. Spinning out a small team into a joint venture with, say, a Tech City start-up, might give the people involved much more freedom to do what is necessary to succeed and hence ensure the best return on investment.

In areas where government has real talent and expertise in a particular domain then this would also open up the opportunity to start exporting what we have pioneered here in the UK to other countries.

158 HM Government, "Civil Service People Survey 2012"

Box 21: Nudge, nudge

The Behavioural Insights Team (aka the 'Nudge Unit'), set up by the government in 2010, tackles public policy and government service improvement using techniques inspired by behavioural economics and psychology traditions. Using the methodology 'test, learn and adapt', the unit's goal is to enhance policy delivery in order to reduce costs, improve outcomes and make services easier to use. The unit champions the use of randomised control trials in particular, testing nuanced policies on a small scale at a small cost to achieve results.[159] When working with the British Courts Service for example, the team trialled a number of text messaging options in order to prompt payment of overdue court fines by the public. At almost no cost other than time, they found that texts personalised to contain the recipient's name greatly increased the repayment rate, dramatically reducing the need for bailiffs to collect funds. This small service improvement is estimated to have saved around £30 million.[160]

Working across Whitehall on a number of issues, the team has identified £300 million worth of cost savings over the next 5 years. The team's success has driven the government to part-privatise the unit, with the intention of expanding its work on an international scale.[161]

As noted throughout this report, although there is much more still to do, the UK is ahead already in many areas of digital government – from government publishing to open data and much in-between. There is a real opportunity to develop a world-leading blend of openness and enterprise that will both benefit the global community and support the UK's outstanding technology entrepreneurs.

Box 22: Knowledge for everyone

The Open Data Institute (ODI) has a mission to create economic, environmental and social value through the use of open data. By collaborating with a collection of businesses, non-profits and academics, it aims to facilitate new, innovative open data practices within and between its partners. Working with a number of tech companies already, such as Mastodon C and Placr, the ODI has helped to build value in start-up companies through identifying datasets and offering resources, connections and advice.[162]

The government has made a £10 million investment over 5 years to help fund the ODI, signalling its belief in the potential benefits. As the ODI is based in the heart of Tech City, it expects to provide vital support to a host of innovative tech companies. It also expects to bring significant value to the government and the wider economy through driving the opening up of data and teaching people how to create value from data.

Clearly these sorts of models will not be right for the vast majority of things that government does. But in some niche areas where radically new or imaginative ideas or approaches have the potential to be generalised and to make a real impact, the benefits for government, citizens and the wider economy could be substantial.

159 Cabinet Office, Behavioural Insights Team, "Test, Learn, Adapt", June 2012

160 Telegraph, "Inside the Coalition's controversial 'Nudge Unit'", July 2013

161 HM Government, "Government launches competition to find a commercial partner for the Behavioural Insights Team", May 2013

162 Open Data Institute, 2013

Recommendations

13. **Publish an open directory of all government officials.** Open policymaking and accountability work best when it is clear who is dealing with what and how they can be reached. Unified government email addresses and staff pages would remove much of the artificial friction generated by departmental silos and staff churn, and help make joined-up, open policymaking a reality.
14. **Enrol the top 10% of staff at all grades in an explicit innovation drive.** This group would have permission to spend 10% of their time designing and testing innovations to improve how things work day-to-day in their organisations. No one in any organisation has a monopoly on the best ideas, and all of us will benefit from more innovation in government.
15. **Allow more central government teams to spin out in partnership with high-tech start-ups and other partners.** Like all large organisations, government inevitably struggles with radical innovation. By spinning some activities out into joint ventures with private and third sector partners, departments can both help start-ups to scale up and get access to fresh thinking that might otherwise evade them.

8
For the Win

Over the previous chapters we have set out fifteen recommendations all geared toward a radical, digital vision for the future of government. Across three broad themes – root and branch digitisation of government activity; developing a total data approach to government; and restoring a culture of excellence and innovation in government – we have set out our views on priorities for any administration that is serious about transformation.

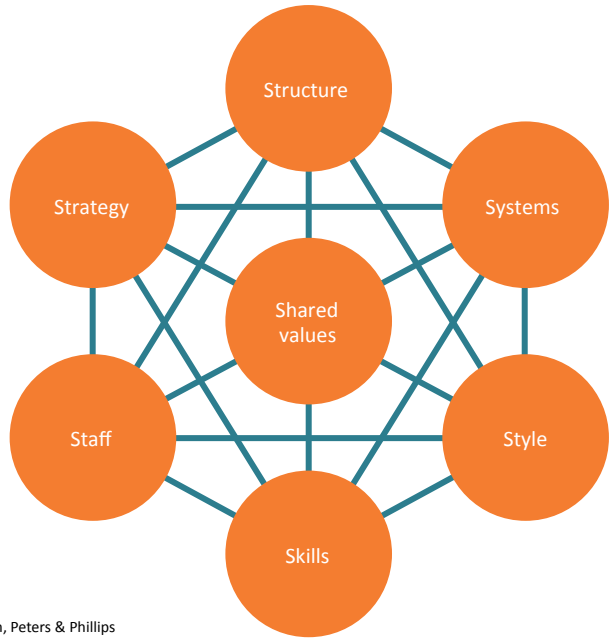
We have chosen to conclude this report by stepping back and reflecting on what it will take for government to pull off a programme of change of this sort of scale and ambition. One of the defining themes of this report is that, even for a future dominated by technologies that we are only just beginning to imagine, the biggest challenges are still about people and organisations.

Seven factors for success

Fittingly for a report looking out to 2020, one of the most helpful and enduring business management frameworks for understanding effective organisations is the "7S" model first developed by Waterman, Peters & Phillips in 1980.[163]

Figure 6: Structure is not organisation

The 7S framework for organisational effectiveness



Source: Waterman, Peters & Phillips

163 Waterman, Peters & Phillips, "Structure is not organization", in Business Horizons, vol. 23, no. 3, 1980

The 7S framework provides us with a good guide for thinking holistically about how our recommendations fit together and about the future of digital government. Although highly stylised, the framework is designed to drive home the idea that, when thinking about transformation, all seven factors need to be in alignment for an organisation to move forward. A discussion about radical change that focuses on only one or two elements of the framework and neglects others is destined for failure.

Here, then, is how we would characterise the transformation required for government to successfully remake itself for the digital age.

Table 3: 7S for digital government

	From... (2010–15)	...to (2015–20)
Strategy	The government's strategy for public sector reform has necessarily and unavoidably been driven by the broader context of austerity. There is general acceptance of the importance of evidence-based policymaking and consultation.	Strategy is central to the digital government debate. The need to transform and reinvent government is driven by the anticipation of deep changes in the world we live in, and in particular the rapid advance of digital technologies. We advocate a common approach to the business of government embedded deeply into all departments and agencies. We refer to this strategy as total data: the relentless pursuit of rapid, material improvement by reference to the facts about what works.
Structure	Some smaller departments and agencies have been rationalised, and back office functions across government are being consolidated into a number of shared service centres.	Discussions about government tend to fixate on questions of structure – how many departments, which way shall we divide business units, and so on. In our view the importance of structural change to government is often overstated. A move to shared services and the consolidation of smaller departments is sensible. But we do not think major changes in the machinery of government are necessary for digitisation.
Systems	An ambitious programme of ICT reform is reducing the annual cost of government technology. Focus on buying flexible, interoperable services that meet user need.	Digital government clearly requires sustained advances in systems. This is partly about completing the job on government ICT so that it stays in line with changing user needs. But it is also about clearing out old analogue systems – behind the scenes as well as in the places where government faces the public – and replacing them with faster, cheaper, better digital alternatives wherever possible.
Staff	The government's reform programme is focused on delivering a smaller civil service with stronger policy and delivery skills and increased accountability. Headcount reductions provide a forcing mechanism for productivity.	People are critically important for transforming government. Senior staff across government must be expected to champion the digital agenda with real passion and to lead by example. Those who are not interested in coming on this journey will need seriously to consider their future in government. More broadly staff at all levels should be given explicit permission to innovate and empowered to test and deploy solutions on their own volition.
Skills	A single service-wide competency framework has replaced a range of different departmental approaches, backed by a common curriculum curated by Civil Service Learning. The government recognises that digital capability is lacking for the move to digital-by-default.	There are two aspects to the skills agenda for government. At the top of government we need to invest heavily in equipping leaders with the experience and insights they need to make effective use of technology in their organisations. More broadly the sort of transformation we advocate requires stronger capabilities around data, digital and scientific literacy at all levels in government.

Style	Ministers have said they want a more business-like approach to government. Nevertheless in many areas evidence-based policy is still seen as an unrealistic ideal and communication between departments is clunky. The prevailing culture is one of inertia and seeking to eradicate risk.	Style is a synonym for the culture of an organisation. Clearly this will vary across government and within individual departments and agencies. Nevertheless government will need to become a place where people frown on decisions that don't stack up against the data, where openness and collaboration are the default ways of working, and where properly defined partnerships with the private sector are seen as a source of strength and opportunity.
Shared values	Digital-by-default and open data are important themes for this phase of the government's digital journey, but they compete for attention with ongoing pressure to keep doing the things government has always done.	To succeed government will need to let go of many of the old ways of doing things, and everyone in government must understand the importance of the shift to digital and the part that they will play in making radical change happen. In the end everything we have described here is in pursuit of one overarching goal: a genuinely open, digital government.

Shared values (sometimes known as super-ordinate goals) are the fundamentals around which any transformation effort is built. A consistent set of shared values is often missing in organisations; conversely if set out with enough conviction then they can leave a mark that touches everything an organisation does. The critical shared values that will bring this whole agenda together build on themes like digital-by-default and the open data agenda that are already in play today. The difference is that pursuit of a genuinely open, digital government must become the defining notion for public sector transformation – and everyone in government must hear this loud and clear.

The size of the prize

For the majority of this report we have not attempted to ascribe potential cash or headcount savings to individual recommendations. This is partly because bottom-up quantification would be a major undertaking, and in many cases would not be possible without significant detailed examination of internal government data. But it is also because our recommendations are not independent of each other. Truly opening up government data cannot be done unless we raise data skills across the public sector. Moving to exclusively digital transactions and proofs will take a bold approach to leadership and performance management. Realising the benefits of grassroots innovation will require government to embrace the lean start-up philosophy as a routine approach to policymaking. What we have described in this report is a wholesale reorientation of the way government is run, and so the recommendations we have set out should be thought of as an integrated package for reform.

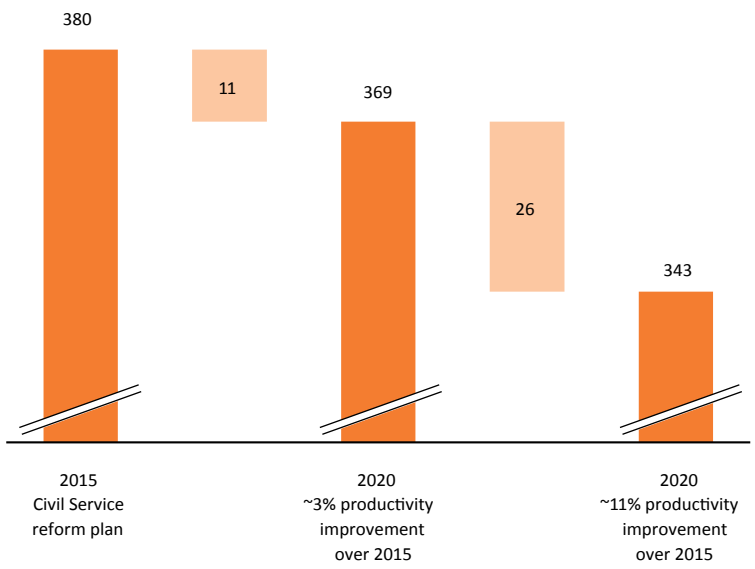
Doing more with less

One way to get a feel for the scale of the improvement we are talking about is to think back to the productivity data presented near the start of this report. For the period 1997–2012, public sector productivity advanced at a compound annual growth rate of 0.6%. So if we take 2015 as our baseline and hold total output constant, with productivity increasing by 0.6% a year we would be looking at a potential business-as-usual improvement of around 3% by 2020.

Figure 7 shows how this compares to a scenario where productivity instead keeps pace with what we have seen in comparable parts of the private sector. For this analysis we disaggregated published Civil Service numbers by grade and projected them forward in line with the Government's existing plans. For 2015 this meant fitting the projected data to the envelope described in the Civil Service reform plan: around 23% smaller than in 2010, operating with around 380,000 FTEs and with the main Ministerial departments ranging in size from about 400 (e.g. DCMS) to about 80,000 (e.g. DWP).[164] We then blended two different benchmarks for the period between 2015 and 2020. For roles at HEO / SEO, Grades 7/6 and the SCS (around 30% of roles), we looked to the professional services sector, where productivity has historically advanced at a compound annual growth rate of 2.4%. For roles at EO, AO and AA (around 70% of roles), we looked to the administrative and support services sector, where productivity has historically advanced at a compound annual growth rate of 1.9%. Taken together, and again holding total output constant, we would be looking at a potential improvement of 11% by 2020, i.e. around 8 percentage points beyond business as usual.

Figure 7: Closing the productivity gap

Civil service scenarios holding total output constant, '000s FTEs



Source: National Statistics, Policy Exchange analysis

With median earnings for civil servants standing at around £24,000, a reduction of 26,000 FTEs beyond business as usual would deliver additional savings of around £600 million a year by 2020.[165] As this reflects salaries rather than fully loaded costs, the true savings are likely to be higher still. Moreover, this analysis looks only at roles in the civil service, which is where the most granular data is readily available, but which altogether makes up less than 10% of total public sector employment.

Taking a further step back, the government's total managed expenditure is currently around £720 billion a year, and forecast to rise to £765 billion by

164 HM Government, "Civil Service Reform Plan", June 2012

165 Office for National Statistics, "Civil Service Statistics", October 2012

2017–18.[166] Of the latter figure, around £395 billion is resource AME (variable payments like social security), around £320 billion is resource DEL (the Treasury's primary lever for controlling departmental spending), and around £50 billion is capital expenditure. Excluding depreciation, resource DEL is likely to stand at around £300 billion and will be dominated by three big categories of spend: staff costs, procurement and grants to local government (it also contains administration budgets for back office functions, grants to individuals and non-profits, subsidies to private companies, and other items of spending). For sake of argument, if the government were gradually to lever open an 8 percentage point saving on this £300 billion figure over the period from 2015 to 2020, then the potential value could rise to around £24 billion in 2020 (or alternatively a cumulative saving of around £70 billion over the five years).

It is important to remember that this sort of analysis is highly stylised. In particular, if total output is assumed to be held constant then higher productivity will necessarily be offset by a reduction in the number of staff required. In reality policymakers will have a legitimate choice to make about the balance between redeploying productivity gains into getting more done with the same number of staff, and looking for further opportunities to reduce the size of government departments and other public sector bodies. We strongly suspect that elements of both will be required. Digitisation should eliminate some roles that are currently directed at supporting very inefficient and outdated analogue processes. But it will also free up time and energy for officials to deliver a better service for citizens, and to pursue potentially ground-breaking grassroots innovation efforts that could transform the way government works.

Wider benefits

The sorts of gains we would expect to see from transformation go beyond the potential to get the same amount done with a smaller number of staff. Amongst other things, we would also expect:

- A more ruthless, data-driven approach to performance management to drive further reductions in money lost to fraud (including tax fraud/evasion), errors and unpaid debts. Previous Policy Exchange research has highlighted the scale of the problem and examined some of the ways that big data tools and technologies might be used to make some headway.[167]
- Flexible, testable, open policymaking to result in better policies that are more effective at achieving the government's objectives and meeting citizens' needs. This goes beyond simply improving public sector productivity: done well, government will make smarter decisions about what works, avoid big mistakes, and leverage our collective wisdom to find new solutions to previously intractable problems.
- Open data and APIs to catalyse wider economic benefits, as individuals, businesses and third-sector organisations create their own interfaces for government services. And digitising government will have huge spill-over benefits as government provides the critical mass for electronic proofs and electronic invoicing to take off, saving time, money and hassle for people on a daily basis.

166 HM Treasury, "Spending Round 2013", June 2013

167 Policy Exchange, "The Big Data Opportunity", July 2012

Postscript: Where We Go From Here

In the introduction to this report we described the sort of world we hope to see take shape over the years ahead. One where technology, data and the internet are harnessed not just at the margins of government business, but to truly transform the way government operates. One where policymaking is better by design, where public servants are liberated to focus their talents and energy where they can make the most difference, and where citizens enjoy a rich, satisfying relationship with the state on terms of their choosing.

All of this – and more – is within our grasp. And the core of this agenda matters for everyone, regardless of political leaning. The notion that we can reach for genuine, transformational change in government, and build a modern, digital, open government to match the needs and expectations of a modern, digital, open society, is one that transcends traditional political ideologies. We recognise that there will be differences of opinion about how to spend the dividends – some will want government to do more with the same, others will want government to do the same with less. But whatever balance one would strike, it is clear that progress can and should be made.

This is for everyone

As we head toward the 2015 general election, transforming and digitising government should be top of mind for politicians and policymakers. A properly functioning government is core to advancing every government's agenda, and there is real scope to make a practical, tangible difference to people's lives.

So this report is only the start of the conversation. For now we extend an open offer to all our public leaders: if you recognise the pivotal importance of the agenda we have set out here, then we will work together with you to take it forward.

We can remake government for the digital age.

Smaller. Better. Faster. Stronger.

Annex A: Research Approach

We adopted a mixed-discipline research approach for this report.

We conducted desk research to ascertain the state of play on digital government, both in the UK and around the world, and the latest lessons from the private sector on how technology is being used by leading organisations. This included the collection and analysis of a range of quantitative data, and the collation of a range of case studies from around the world, many of which are cited in this report.

We issued an open call for evidence at the start of the project to identify previous findings and conclusions for us to review, consider and build on. We received 23 detailed responses from people in business, in the public sector, in academia, and from people responding in a personal capacity.

We conducted 33 structured interviews with leaders in the public sector, including both senior civil servants and elected politicians, about how technology is transforming government, how to make better use of data and the internet, and the leadership challenges associated with these developments. We also spoke to a wide range of people in the private sector and civil society about their perspectives on the transformational potential of technology and how government can make the most of collaboration with external partners.

We held a number of workshops and round table discussions during the course of the project to better understand different perspectives on the digital government debate. We also hosted a number of panel debates designed to provide a public space to discuss and explore some of these issues.

We submitted requests under the Freedom of Information Act to 38 government departments and agencies for information about their ICT budgets, contracts, devices and internet use. We were provided with responses (of varying completeness) by 34 of these departments and agencies.

We engaged YouGov to survey around two thousand individuals working in the UK public sector in order to explore their attitudes to technology and organisational effectiveness. A summary of the findings from this exercise is included at Annex B.

Annex B: Survey Findings

Frustrations about the use of technology and the effectiveness of business processes are shared by many of those who work in public sector organisations. To help inform this report we engaged YouGov to survey around two thousand individuals working in the UK public sector, in order to explore their attitudes to technology and organisational effectiveness. The survey was conducted online.

Table A1 shows the composition of our sample against the actual shares of employment in the public sector as reported by the Office for National Statistics. In our sample, people working in the education and public administration sectors are slightly over-represented, and people working in the NHS and other health and social care fields are slightly under-represented. This is not a major source of concern as the pattern of responses to the questions in our survey was broadly similar across the different groups.

Table A1: Public sector workers

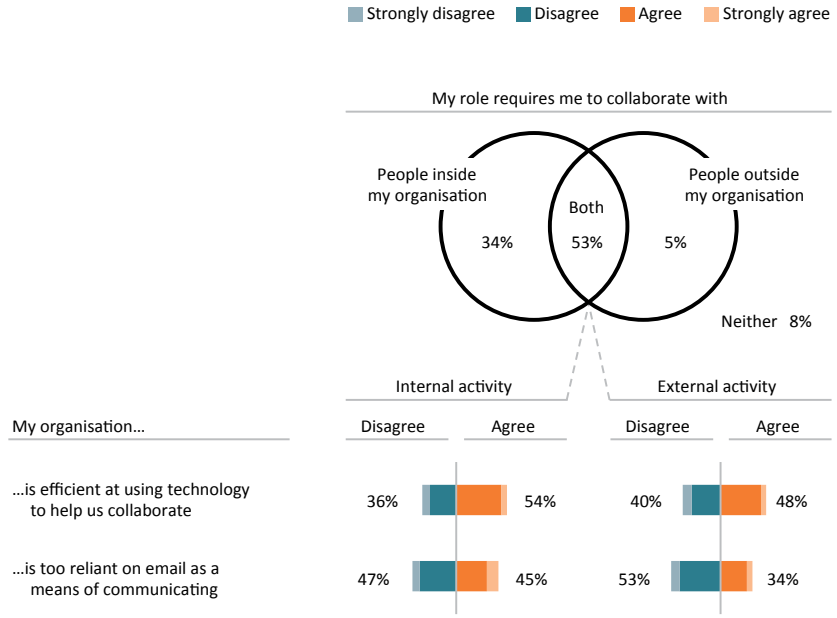
Sector	Actual share	Sample share
Construction	1%	<1%
HM Forces	3%	2%
Police	5%	4%
Public Administration	19%	27%
Education	26%	38%
NHS + other health/social	32%	21%
Other	14%	8%
All public sector	100%	100%

Figure A1 shows how people responded to questions about collaboration and communication. Overall 87% of our sample said their job requires them routinely to collaborate with other people inside their organisation, and 58% said their job requires them routinely to collaborate with people outside their organisation. Of those involved in internal collaboration, only 54% said that their organisation was good at using technology to help its staff collaborate internally, and 45% said that their organisation was too reliant on email as a means of communicating internally. Of those involved in external collaboration the figures were 48% and 34% respectively.

Figure A2 shows how people responded to questions about barriers to efficiency in their organisations. 39% said that their organisation has difficulties dealing with paper documents, 31% said that their organisation has difficulties dealing with electronic documents, and 47% said their organisation has difficulties coping with a large number of meetings and other demands on their time.

Figure A1: Effectiveness of collaboration

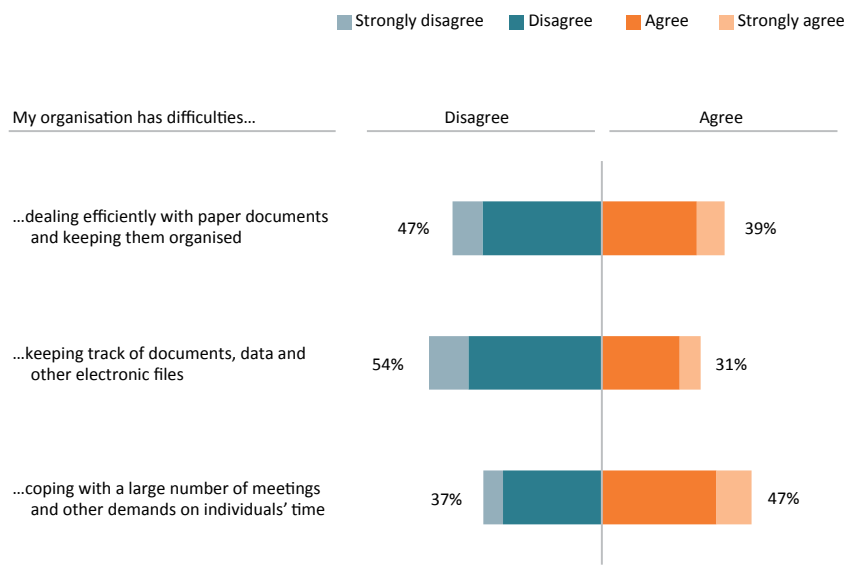
Public sector, n = 2,047



Source: YouGov, Policy Exchange analysis

Figure A2: Barriers to efficiency

Public sector, n = 2,047



Source: YouGov, Policy Exchange analysis

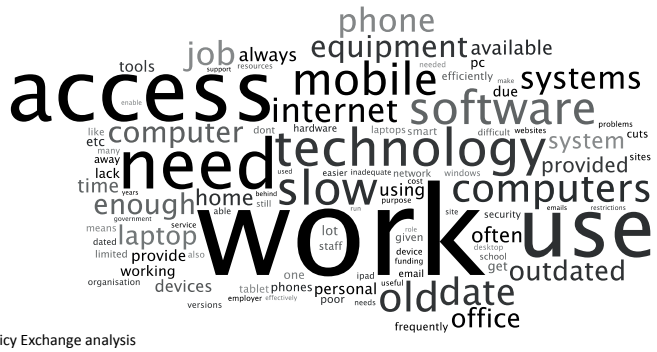
When we asked about tools, 78% of people agreed (or strongly agreed) that they had access to the tools and technology required to do their job efficiently and effectively, whilst 20% disagreed (or strongly disagreed). Figure A3 illustrates some of the sentiments expressed by those in the latter group when asked to elaborate on their answer.

Figure A3: Inadequate tools and technology

Public sector, n = 417

Disagree or strongly disagree: "I have the tools and technology I need to do my job efficiently and effectively"

Key words used to describe why (larger type = cited more frequently)

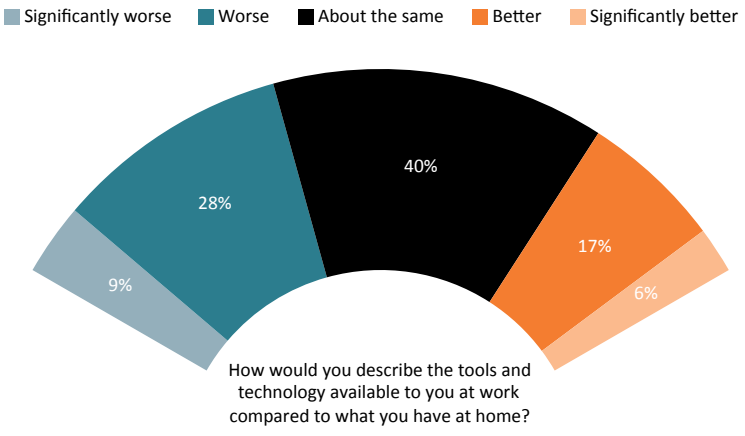


Source: YouGov, Policy Exchange analysis

We also asked people to think about how the technology available to them at work compares to what they have at home. In the past, the performance of workplace computers was well ahead of what the average person could realistically aspire to own in a personal capacity. This is no longer necessarily the case. Figure A4 shows that 37% of public sector workers think that the technology available in their workplace is worse (or significantly worse) than the technology they have access to at home.

Figure A4: Working better at home

Public sector, n = 2,047

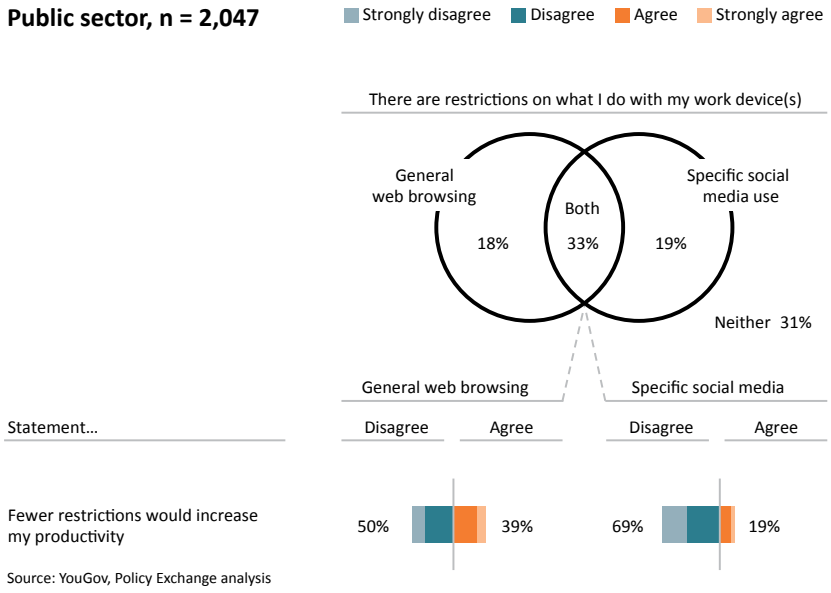


Source: YouGov, Policy Exchange analysis

Restrictions on what people can do with their work devices are also an issue for some people. Figure A5 shows that around half of people are subject to restrictions on either general web browsing and / or the specific use of social media. When the people facing these restrictions were asked about their impact, 39% said fewer restrictions on general web browsing would increase their productivity. Only 19% said fewer restrictions on the use of social media would increase their productivity.

Figure A5: Access denied

Public sector, n = 2,047

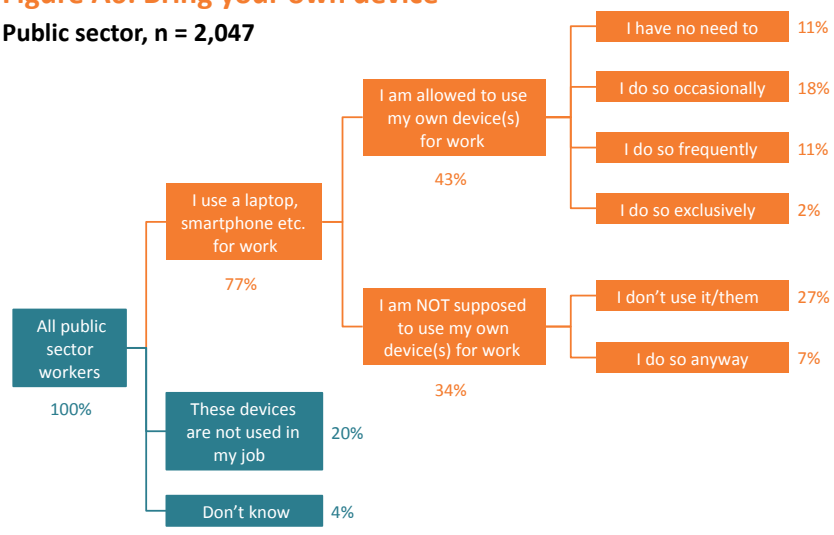


Source: YouGov, Policy Exchange analysis

Disparities in performance and freedoms may be related to the way some people are using their own devices in the workplace. When asked about bringing their own devices to work, of the 77% whose job involved substitutable technology like a laptop or smartphone, one in ten were not allowed to use their own devices for work purposes but did so anyway.

Figure A6: Bring your own device

Public sector, n = 2,047

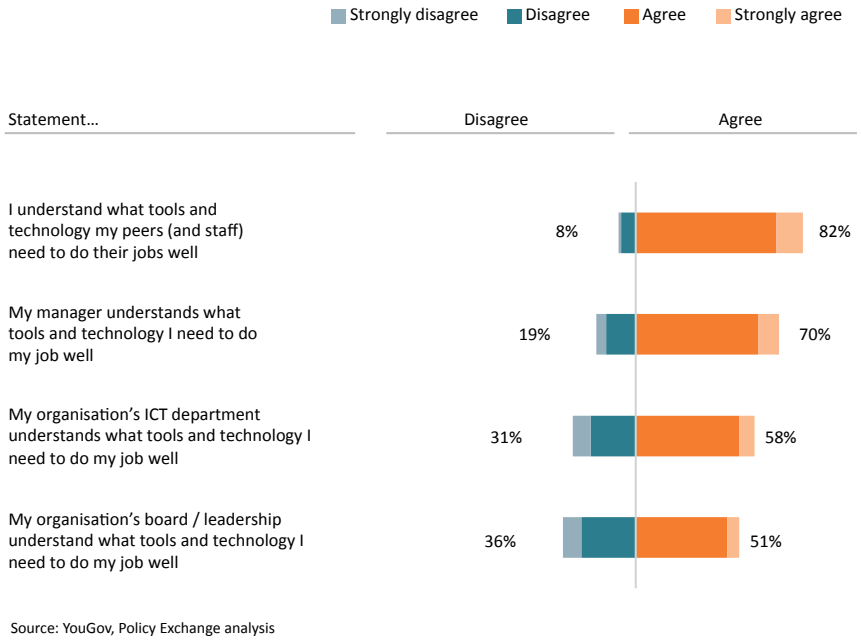


Source: YouGov, Policy Exchange analysis

Finally we asked about the extent to which people felt that their user needs were understood. Figure A7 shows that people are generally confident about assessing their own needs, but only half of people agree that their organisation's board or leadership understands what tools and technology people need to do their job well.

Figure A7: Who knows best?

Public sector, n = 2,047



Source: YouGov, Policy Exchange analysis

YouGov Plc total sample size was 2,047 public sector workers (aged 18+). Fieldwork was undertaken between 24 April and 1 May 2013. The survey was carried out online.

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